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VOLUME 224 MAY 22, 1941 NUMBER 21

MASSACHUSETTS MEDICAL SOCIETY

THE ROLE OF THE PHYSICIAN IN A COMPETITIVE SOCIETY*

A. WARREN STEARNS, M.D.†

BOSTON

Know then thyself, presume not God to scan;
The proper study of mankind is man.

Pope: *Essay on Man* (Epistle II).

THE place of the physician in the community has been fixed by long years of tradition. In primitive society, and in remote history, he was a sort of conjurer or magician called upon in times of great calamity or dire distress as an intermediary between the supernatural and the natural. He has developed throughout history, oftentimes somewhat ahead of contemporary civilization, and has emerged from the realms of magic, superstition, conjecture and belief, largely through the channels of biology, until today he stands as the exponent of the scientific method as related to human welfare. For many years, through the ever-unfolding knowledge of anatomy, physiology and pharmacology, he sought to alleviate suffering by treating the ills with which he found his patients afflicted. His task had largely to do with the treatment of individuals. As medicine took on more and more of a scientific aspect, it is only natural that there should have developed special interests, and thus we find certain physicians whose propensities led them to devote their lives more and more to research and scholarship; they have tended to associate themselves with medical schools. Others very early saw a gain to human welfare in preventive medicine; they therefore occupied themselves in developing the field of sanitation and have tended to occupy posts in the public service. Still the great mass of physicians plied their trade by ministering to the suffering of afflicted individuals.

Latterly, throughout the field of science there has been a great interest in chemistry. The clearer understanding of certain physiologic and pathologic processes through chemical research, together with the remarkable advance in chemotherapy, has tended to put chemistry very much in the foreground, to the great good of individual sick persons, as well as to society at large. Likewise, through the development of anesthesia and asepsis the field of surgery has grown to a degree of perfection and usefulness beyond the dreams of the most enthusiastic but a few years ago. Let us hope, indeed we may expect, that medical scholarship, as exemplified in the schools, will continue to develop. Certainly the greater and greater participation by governmental departments in sanitary science and preventive medicine carries great promise, while specific therapy and surgery show no evidence of a slackening pace.

Yet man does not live in a vacuum. He has, as Cannon[1] has so ably pointed out, an internal and an external environment. He is a reacting organism continually played upon by environmental stimuli, and his social status has many important medical implications.

Slightly less than two hundred years ago, a wave of humanitarianism came upon Western civilization. Ruthless, predatory man paused for a moment in his egotistic career and cast a pitying glance at his less fortunate brother. He found a substantial component of human society utterly degraded, the depths of degradation being expressed by the jail, the poorhouse and the asylum. Strong hearts and courageous souls sought to alleviate the condition of these persons, and substantial progress was made through the improvement of public institutions. Very early there appeared an important medical component in this undertaking, and doctors were frequently found in positions

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of leadership in this field of human endeavor. At first expressed through better sanitation, more humane treatment and better care of the sick, this medical interest gradually became focused on the personalities of the individuals and their behavior in society. From this lowly origin has developed the specialty of psychiatry, and we now think of many of these submerged persons in terms of mental disease, defect or peculiarity.

FIGURE 1.
A community of pines, showing a homogeneous appearance.

FIGURE 2.
A closer view of the pine community, showing an inequality of growth.

The study of these patients by modern technics of physical examination reveals very little. Nor were the majority of their ills capable of attack by either specific therapy or surgery. It was soon found that a study of the organism was quite incomplete without a knowledge of the situation in which it was placed. Psychiatry has accordingly tended to some extent to be a bridge over which medicine has passed into the social sciences. Many of the data of the social sciences were found to be quite sterile so far as their biologic content was concerned, but gradually there has developed in the fields of sociology, psychology and psychiatry a meeting point in the behavior of the individual, and a concern over the situation in which he is placed.

If the problems of medicine are fundamentally biologic, it is important as a means of gaining perspective that the elementary principles of liv-

ing matter be known, and that natural law be kept continually in mind. It is perhaps well to begin our study with some simpler form of life. The pine tree may be taken as an example. If we view a community of pines from a distance, the whole group appears to be a homogeneous mass of verdure, but if we examine it more closely we find it to be made up of individual trees. The most superficial scrutiny shows a gross disproportion in the growth of these trees. Some appear to be sturdier and healthier than their comrades. Their growth has been greater, and they obviously get more sunlight from the air and water from the ground than their less fortunate fellows. The stronger ones grow to the hurt and even to the death of surrounding trees. Yet we do not express this greater growth in teleological terminology, or impute hostile motives to the more successful tree. We speak of the survival of the fittest, but do not imply a conscious attempt to destroy one another. This condition can better be expressed in functional terms, as follows: There is a propensity on the part of all trees to grow, and it is a function of certain elements in the trees to get all the sun and water that they can. As a result of the carrying out of this function, growth takes place. The better endowed trees prosper disproportionately. The effect on the other trees is secondary and incidental. Whether we subscribe to Darwin's[2] evolutionary theory of a constant betterment in nature, to Spengler's[3] theory of a rhythmic rise and fall for better or worse or to Sorokin's[4] concept of a cycle of cultures is not important. Throughout Nature there is a tendency on the part of organisms to develop and grow. I take it that no one will dispute the contention that this principle applies to man as well as to pine trees. Yet, when we study the pine tree our attitude is relatively dispassionate and correspondingly less biased, whereas the study of man immediately involves the operation of factors not present when judging the rest of Nature. Among these factors are the ethical, humanitarian and moral. Nevertheless, this does not invalidate the principle of Darwin's law of the survival of the fittest. It is natural for man to grow. There are elements in his make-up that function to get the wherewithal by which growth takes place. The hurt, if any, to other elements in society is secondary and incidental. The growth of certain persons is bound to be greater than that of others. However this may be, it is a fact that the operation of natural law is as if the conduct of the individual in relation to others were purposeful. The selfish and predatory man operates in society as if he were determined to dominate his fellows, and, in certain cases, to destroy them. For this reason, social engineers must take cognizance of the hurt, if any, done to society by the unrestrained operation of natural propensities in superior individuals. Likewise, it must take cognizance of the frailty, folly and incapacity of others who, though not purposely trying to destroy themselves, act as if such were their purpose.

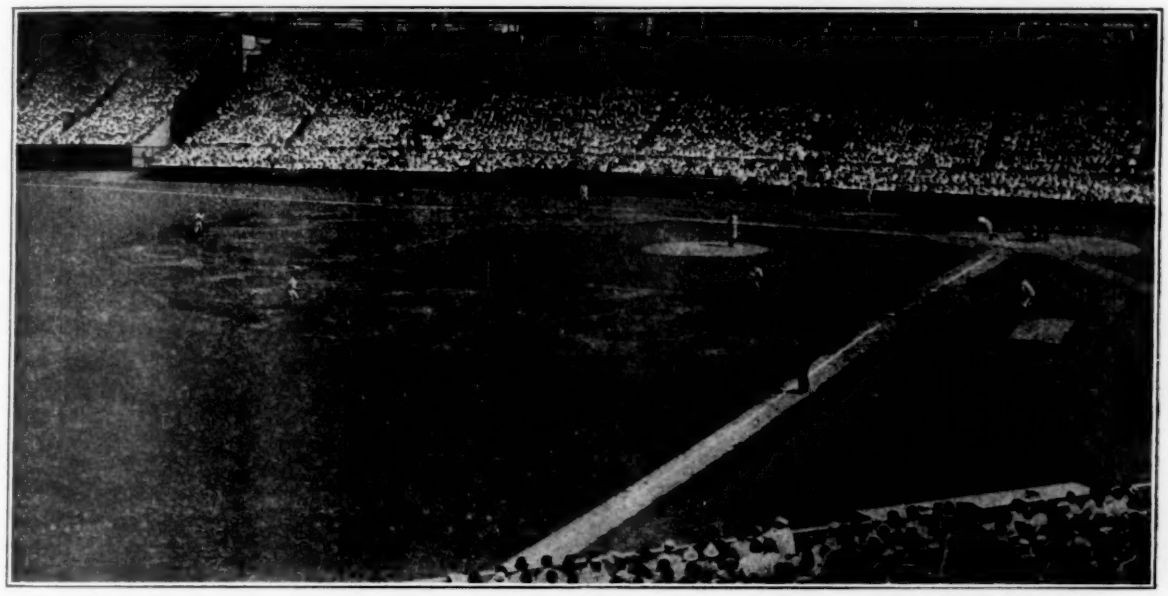

FIGURE 3.
A crowd of people, showing homogeneity.

One fundamental difference between the pine tree and the human being is the effect of growth by the individual on its fellows. With the pine tree, although the community may offer more or less mutual aid through soil conditioning, protection from hurricanes and otherwise, this is not so pronounced as in the human being. Ordinarily, where the human being grows to great stature he provides opportunities for similar, even though less extensive, growth on the part of many associates. In fact, the less capable people are often quite dependent for their status on the initiative, energy and creative genius of those who are superior. When this is done with candor, good faith and fairness, the superior persons may be said to be performing a service to their less well-endowed associates. On the other hand, there is a line beyond which this becomes a disservice and is called exploit. Veblen[5] designates the means of exploit as force and fraud. If we accept this definition, any use of another's talents that embodies force or fraud is exploit and may be considered a disservice. Obviously, if the government essays to referee our mutual relations, the latter is the field in which it should operate, always being careful not to apply the police technics used to curb exploit for the purpose of interfering with real service. Whether or not the employment of one person by another is service or exploit is a delicate question. Attempts have been made to define it on the basis of wages and hours of work. In actual practice this may have very little to do with determining the distinction. Employment of a handicapped person at a low wage may be a great service to both the individual and the community.

FIGURE 4.
A closer view, showing individual differences.

If this same type of scrutiny is applied to society, in the mass, human beings appear to be very much the same. Their basic physiologic striving is identical, and we often speak of society as if it were a homogeneous mass of identical individuals. Here again closer scrutiny shows a stratification. By whatever standard we measure individuals, whether political, economic or social, each falls in a rather definite place in a great social hierarchy. According to Sorokin[6] this is true of every society that has been the object of scrutiny.

Leveling processes have been tried from time to time, but have always ended in disaster. Sorokin speaks of the social structure as a cone, the profile of which, although it fluctuates somewhat from time to time, tends to be the same. During good times, the rich grow richer, but every element of the cone shows a similar benefit. The general character of the cone remains about the same.

Again, if we scrutinize this social mass we note a constant mobility. That is, we find a tendency on the part of certain organisms to grow out of proportion to certain other elements and to rise to a higher and higher level. Certain other elements either remain stationary or tend to settle out, forming a vast sediment of relative immobility

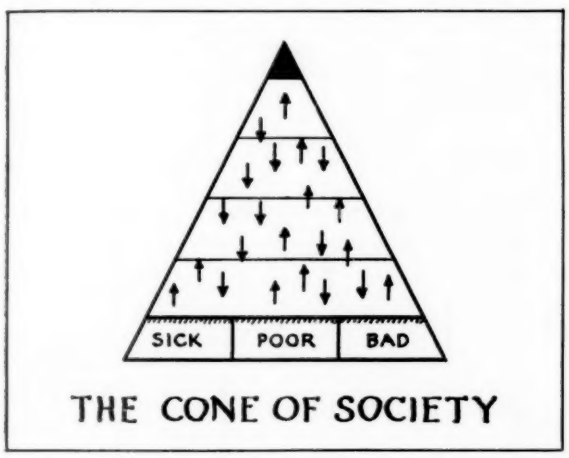

FIGURE 5.

This Cone of Life *shows the relatively greater numbers in the lower registers, and the general mobility of the mass of the cone, with a settling out of the more seriously handicapped into the lower stratums.*

at the lower levels. To be sure, certain persons, through the wisdom of trustees, are able to remain more or less immobile in the upper stratums for a while, but a constant tendency is found to revert ultimately to lower levels.

Much might be said concerning the factors making for growth. A superficial study of those elements tending to rise seems to indicate the presence of such attributes as strength, intelligence, industry and virtue. Perhaps the generation of energy on the part of the individual is of first importance. If we break down the behavior of the individual into its elementary dynamics we find first a striving on the physiologic level. This has to do with the basic and more or less automatic factors in life. These are carried out quite unconsciously and, of course, are purely selfish. To a lesser extent, human behavior is conditioned by social pressure. Such factors as morality, prudence and cautiousness tend to be in this social category, and, therefore, are to quite an extent dependent on indoctrination. Lastly, a greater or less amount of intellectual guidance tends to modify and direct the operation of the two former forces. Here again, people differ in the basic physiologic drives im-

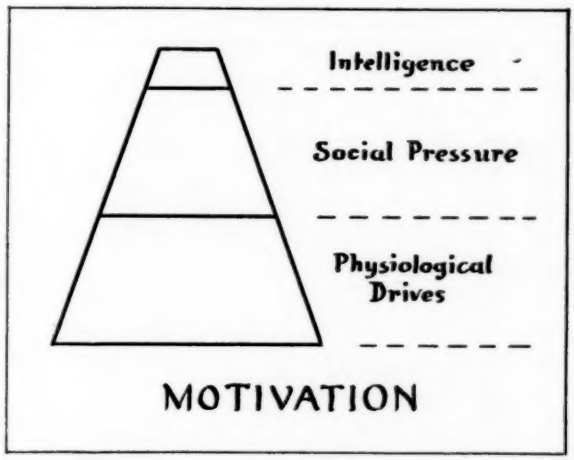

FIGURE 6.

The driving forces behind human behavior are the automatic or physiologic instincts varying with individuals; the sociologic component is that part of human behavior which responds to social pressure and hence is subject to indoctrination; and last, if not least, is the intellectual force.

pelling them forward. They also differ in their responsiveness to social pressure, and, lastly, they vary tremendously in intellectual equipment.

There is still much work to be done in understanding the factors of social mobility, but it is possible to study the composition of the relatively immobile sedimentary elements in society because such persons tend to come under public scrutiny, and their misfortunes become matters of public record. A gross-specimen view seems to indicate an almost pure culture of social disease at the base of the social cone. They have been classified by state departments and institutions through the administrative officers of society as the sick, the poor and the bad. It is true that we find sickness, poverty and crime throughout the whole of society. The sediment differs largely in that it is quite a pure culture of these evidences of social sickness. If we examine these categories a little closer we find a marked degree of overlapping among them. The sick are often impoverished,[7–9] the poor are often bad, and vice versa. I have been told that 68 per cent of the people admitted to a large poorhouse had previously been in jail. Large percentages of criminals are known to have ill health, and the whole realm of disease is often closely related to the other disabilities.

Until recently a large municipal hospital would not accept cases of venereal disease to its wards. So that all we can say of these three groups is that certain individuals are preponderantly sick, and, therefore, their illness is what calls for first attention. The others are preponderantly poor or bad. In the field of etiology, their difficulties

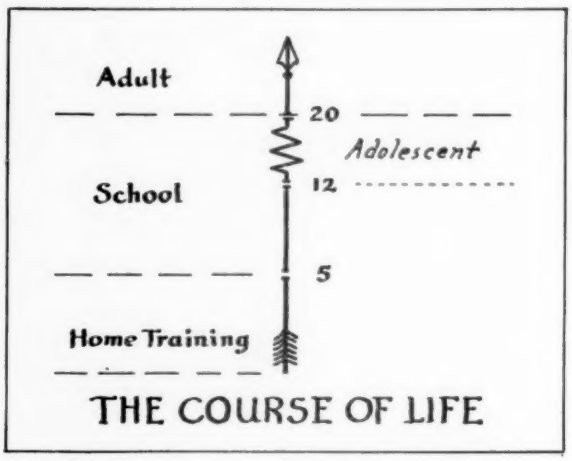

FIGURE 7.

This diagram shows the chronologic application of the forces indicated in Figure 6. The physiologic instinct is more overwhelming in childhood, and the problem of training young children has largely to do with conditioning physiologic responses. The later period of school is the time for indoctrination and the application of social pressures. A period of chaos is indicated during the turmoil of adolescence. Lastly, during adult life the intellect is supposed to take over more or less direction of these earlier basic factors.

appear to spring from the same sources. They all tend to be handicapped, each one with a large medical component. Therefore, it seems axiomatic that medicine cannot serve with maximum social benefit without taking cognizance of these matters. Furthermore, the terms sick, poor and bad are all relative. We can represent their degree as with a thermometer. At the top it is generally recognized as hot, at the bottom as cold, and yet the exact position where cold ceases and hot begins is relative. If one goes from a room with a temperature of twenty into a room at fifty, he says it is warm. Yet if he had previously been in a room with a temperature of seventy, it would seem cold. Likewise, there is no level at which one may be said to be good or bad, rich or poor, well or sick. For this reason it would seem fallacious to be too arbitrary in setting standards. A person with psoriasis may be said to have a chronic, incurable disease, yet he may suffer very little disability from it. Similar observations might be made concerning the poor and the bad.

The number of dependents in a community is a variable that fluctuates between certain levels. Under natural law, during prosperous times, all stratums of society are benefited, even the insane. Likewise, during bad times all suffer. Those at the upper levels, of course, have more fat on which to live, and, therefore, suffer less in the essential matters. Bad times usually lead to remedial efforts on the part of society to alleviate the suffering of those whose situation is most desperate. Although in theory, the roof of the relief load is governed by the necessities of the individual, in practice, dependency is artificially expanded. The tendency to exploit is not peculiar to any class of people, but is a component of every person. Normally, during hard times, social necessity creates a pressure, which induces the less well endowed to work harder at longer hours and lower wages. It may be well for government acting as a referee to see to it that such persons are not exploited by their stronger fellows. How-

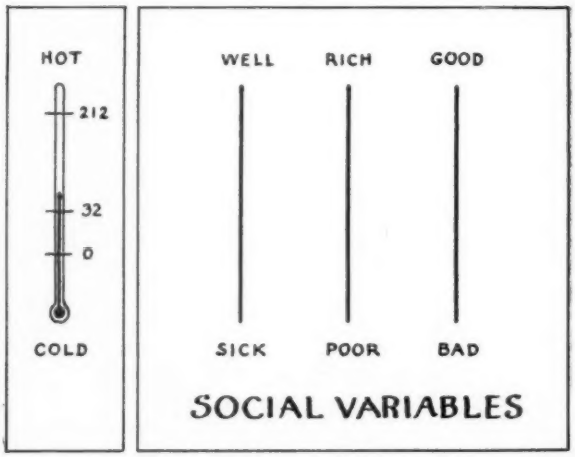

FIGURE 8.

Heat and cold are variables, and there is no point where one can arbitrarily divide temperature sense into hot or cold. Likewise, health and economic and moral statuses are variables for which it is difficult or impossible to set arbitrary standards.

ever, if such attempts, carried out horizontally, are too beneficent, there is apparently no limit to the rising height of the relief load. When the relief load becomes large enough, it too becomes the object of exploit by politicians, social workers and government officials. The politician exploits the distress of these people for purposes of votes, the social worker and government official because the size of their jobs tends to enhance their prestige as well as to increase their salaries. Incidentally, the same factor of growth enters this situation if those having charge of dependent groups happen to be successful promoters, and the growth of the individual and of the problem takes place

pari passu. Furthermore, there is some ground to believe that it is futile to set an arbitrary standard of living. In fact, the use of the word "standard" is unjustified. There can be an average level of living, but there can be no standard arbitrarily set because of individual differences. What seems a pittance to one man is like a fortune to another. There has recently appeared a discussion of this problem in which it was stated that 66 per cent of the population were living on a substandard basis.[10] This is like saying that the average is below the average. It may be a mistaken kindness on the part of those in the upper level to set the satisfactory level of living at a point higher than that at which 66 per cent of the people can sustain themselves. Furthermore, this immediately provokes the question: Can a minority of the people sustain a majority at a level of living higher than they are able and willing to sustain themselves? If the answer to this question is, Yes, another question is immediately provoked. How small a minority of the people can sustain how large a majority at a level higher than they are willing and able to sustain themselves? To be sure, this seems simple enough to the levelers through the field of taxation. However, in the imperfect state of the human mind at the present time, it appears that there is a point in taxation for the purpose of assisting the less well endowed at which the better endowed is discouraged or, at any rate, deterred and inhibited in his capacity to grow, thus invoking the law of diminishing returns. Society cannot lift itself by the boot straps any more than the individual can.

TABLE 1. *Groups of Handicapped People in Massachusetts.*

CLASSIFICATION	NO. OF PERSONS
Population of Massachusetts (1940)	4,316,721
Aided by private charity	1,743,863
Aided by State and towns	631,556
Aided by Boston Community Chest (1940)	400,000
Employed by WPA	82,000
Arrests (1939)	209,343
Admitted to penal institutions (1938)	15,000
Under care of Veterans' Bureau (1940)	17,104
Under care of Department of Mental Health (1940)	26,000
Estimated incidence of feeblemindedness (2 per cent)	86,000
Estimated sick with chronic disease	500,000
Estimated disabling physical defects (3.1 per cent)	124,000
Admissions to hospitals (1940)	424,951

To present more specifically the problem of medicine concerning these matters, it seems appropriate to break the groups down further and set them up in new categories as follows: the child; the aged; handicapped classes; the insane; the feebleminded; the neurotic; the disordered personalities; drug and alcohol addicts; and the physically diseased.

THE CHILD

The child is a relatively helpless person. Wherever evidence of social disease is found, there is always an excess of children. The law does not recognize the child as legally competent until he is twenty-one years old. He cannot vote, hold title to real estate, inherit property, incur debts or marry. Thus, we have the traditional dependence and incapacity of the child, and among the first efforts in the field of social welfare were attempts to protect children.

Population studies[11] estimate about 35 per cent of the inhabitants of Massachusetts as under twenty-one years of age. This would place the number at approximately one and a half million. General health measures appear to be fairly well organized, and tremendous strides have been made in control of infectious disease. However, there are social responsibilities that it is imperative to recognize in connection with children. Some have competent but many have incompetent parents. The doctor certainly has responsibility in this field. In the first place, he brings the child into the world. He treats the various ills to which children are peculiarly susceptible, and, in matters of nutrition and growth, he takes the initiative and leadership, frequently being obliged to hold parents to their task. In the field of immunization the individual doctor has not taken so much initiative as might be desired. Who could better participate in the education and training of the child than the one who has had so much to do with the other phases of his upbringing? There is a tendency on the part of parents to make pets of their children, and to be lax in the disciplinary requirements of their training. The development of inferiority and paranoid reactions may well be the result of parental bias and leads to unhealthy attitudes of mind.[12] Thom[13] has many times shown the relation between faulty habits in young children and later maladaptations. So much has been said concerning this matter that it hardly seems necessary to reiterate. Furthermore, from time immemorial the minds of young people have been prepared for the struggles and vicissitudes of adult life by the promulgation of certain attitudes. The competitive elements in school marks, organized play and other attainments may be used in such a way as to be very helpful, or they may be exploited to the injury of growing children. The doctor should not assume these tasks alone, but should do his share along with parents, religionists and teachers.[14] Fortunately, the majority of children are only temporarily incapacitated, for, with the development

of maturity, they soon emerge from the sedimentary stratum and take their place at whatever level in the social scale their capacity to grow places them.

The Aged

At the end of the scale we have the aged. Much has been written and said concerning the ever-increasing number of the aged. It is estimated that at the present time about 8 per cent of the population is over sixty years of age.[12] This gives a population of approximately 350,000 old people in Massachusetts. We do not know how many of these are dependent or what they are doing. Some 80,000 are receiving old-age assistance, and the number is increasing each year. Many new bills are before the Legislature to lower the age of eligibility and to increase the amount paid to each person. Much that has been said concerning the situation of the child might apply with equal appropriateness to the aged. Likewise, conditions make it increasingly difficult for the aged to support themselves in ordinary competition with young, vigorous persons. They are more susceptible to illness, probably more prone to accident, and in many ways a greater liability than younger people. The grant of a special form of relief to the aged has tended to weaken the pressure on children to care for their parents, and has likewise reduced the incentive on the part of the older persons to carry on. Innumerable private institutions have grown up depending on the helplessness of these aged persons for their support. They are also particularly vulnerable to exploit.

Medicine must shoulder its share of the responsibility for the care of this group, and should furnish leadership in the field of social engineering as applied to the aged. Obviously, if they were all pensioned, the cost would be almost prohibitive. It also seems true that the vast majority of older persons would be happier pursuing some gainful occupation, and maintaining thereby their self-respect and dignity. There is a great disproportion between chronologic and physiologic age about which more should be known. Certainly a program for aged persons, preventing the indignities and deprivations of neglect, guarding against exploitation, and yet giving them an opportunity for a full, satisfying life commensurate with their abilities, needs the medical profession badly. The beginning of a specialty of geriatrics augurs well for the future.[15] When an aged person is found in the sedimentary zone of society he is usually there for good, and most of the aged grow increasingly unable to support themselves at levels above dependency.

Handicapped Classes

There are many groups in our society against whom great odds are arrayed.

Approximately half the population of Massachusetts is female. Ordinarily, but 25 per cent pursue gainful occupations.[16] They are susceptible to certain disabilities not common to males. When they work they receive a smaller salary, and are still quite dependent on male initiative to keep their status in society. For this reason, the capacity of the female to grow is limited as compared with the male, and they are therefore found in certain dependent positions out of proportion to their occurrence in society. This has been recognized by the provision for mothers' aid.

More than half the population of Massachusetts are foreign born. Coming to our shores from a foreign land has been a great stimulus to certain persons. By hard work, long hours and low wages they have advanced their status till at the present moment our colleges are literally overflowing with the children of immigrants. Alas, so are our prisons.[17] Here again, competition is not even. The foreign born tend to receive lower wages than the American born and have less education. They are found out of proportion to their incidence in society in prisons, hospitals and poorhouses. An equal degree of success by a foreign-born person means greater ability, strength or industry. When they fail, they lack the resources to carry on and are consequently found in a sedimentary nonmobile stratum in excess to native born.

The Negro, largely by virtue of the amount of pigment in his skin, is a handicapped person in our state. When 25.9 per cent of the native white population of Massachusetts were unemployed, 33.9 per cent of the Negroes were out of work.[18] They are found in hospitals and other institutions out of proportion to their incidence in society. Of a certain class of criminals admitted to the Charlestown State Prison, 10 per cent are colored, whereas their incidence in the general population of the state is but slightly over 1 per cent.[19] This tends to place them at a lower level in society, to concentrate them in squalid districts, and thus increases their susceptibility to poverty, disease and vice.[20]

Good social engineering on the part of the medical profession cannot equalize the opportunity for all, but it can recognize the situation and do its part toward a rational program for prevention and cure.

The Insane

Nobody knows how many insane there are. The only figures we have are state hospital admissions, but there is ample evidence of the wide distribution of mental disease throughout all stratums of society. Those of us who are practicing psychiatry in the city, and attending large clinics, are in daily contact with a considerable number of persons with definite mental disease, yet of such a nature that their families are able to care for them. This applies particularly to the aged and to persons with mild depressive psychoses. Many of the inmates of nursing homes and sanatoriums are technically insane, although not carried on the books as such.

In the early days of our state-hospital system, a hope was set forth that, if persons with mental disease could be brought in earlier and would stay longer, as high as 84 per cent of them could be cured.[21] Upon this hope, to some extent, the state hospital system has developed until we now have approximately 30,000 under care in Massachusetts. Some have recoverable diseases, and their ultimate discharge can be predicted at the time of admission, but with the vast majority we are dealing with deteriorating processes, and they are looked on largely as problems for custodial care. Once the burden has been lifted, the family is very loath to assume it again. The only limit to the state hospital load up to the present time is the number of beds available.

This problem first of all calls for investigation. Already there appears to be some diminution in the number of persons developing mental disease because of syphilis, but this barely touches the surface. The state-hospital system has already been expanded to a point where great resistance toward its further extension is met from tax-minded people. It has been suggested that a considerable number of inmates at present in state hospitals could be cared for in the community under proper supervision.[22] For a number of years people have been encouraged, and almost exhorted, to send patients to hospitals for mental disease early. Perhaps we are reaching a stage where some selection must be made, and the medical profession must equip itself to supervise intelligently large numbers of persons with mental disease in the homes of the community. It is obvious that the vast majority of persons with frank mental disease are thoroughly disabled and bound to be in the sedimentary stratum of society.

The Feebleminded

Certain children do not develop intellectually and are called feebleminded. There may be some debate as to exactly the level of intelligence that should stamp one as feebleminded, but the helplessness of this group is universally recognized. Conservative estimates place the number of feebleminded in Massachusetts as around 2 per cent. If this is true, there are at least 86,000 feebleminded in Massachusetts. Approximately 5000 of these are in institutions for the feebleminded. One hundred years ago, a beginning was made toward training the feebleminded, the idea being that with special training they would develop and take their place as normal citizens. Unfortunately, this fond hope has not been realized. The number in the institutions, as set forth in a recent study,[23] indicates an ever-increasing age and a diminished discharge rate. At the present time 57 per cent of the population of the schools are over twenty years of age, that is, beyond the age at which education is usually successful even in healthy persons. This report, which is the latest statement concerning the problem of the feebleminded in Massachusetts, makes no attempt to solve it but ends with a fervent plea for one more institution. If the proponents of this measure should be successful, the total result would be that instead of their being 81,000 feebleminded abroad in the community, there would be 79,000. This does not seem a sufficient end. Here is a challenge to the medical profession. At the present moment, we have little to offer between 100 per cent incarceration in a school for the feebleminded and 100 per cent neglect in the community.

Although the general helplessness of the feebleminded is recognized, they are held up to many responsibilities. They are entitled to vote and to buy liquor, and are called on to support themselves. The average doctor pays little attention to this group. There are some whose parents are thoroughly competent and able to protect and provide for them, but the vast majority are turned loose and do much to augment our social perplexities. The number of feebleminded in jails, poorhouses and hospitals is proportionately large. When the physician is consulted, he shakes his head, speaks vaguely of the state schools and their overcrowding, and often has little more to offer.

Now there is a level at which many of the feebleminded can lead independent lives.[24, 25] In fact, of all those discharged from the state schools 15 per cent are considered capable of self-support, and 14 per cent are capable of partial self-support. Perhaps, the group sent to the school tend to be the more troublesome cases.

Certain developments in society during the past few years have made it increasingly difficult for

handicapped persons to pursue gainful occupations. These militate particularly against the feebleminded, and may therefore be discussed here. In the first place, the change from an agrarian and rural to an urban community presents problems. Eighty-nine per cent of the population of Massachusetts now dwells in cities. The transition from large, independent households to tenement dwellers makes it increasingly difficult for a family to develop the talents of a feebleminded person, and especially, the field for productive labor on the family farm is well-nigh closed. Likewise, the control of certain people by workers' organizations tends to exclude the feebleminded and other handicapped persons. Again, the setting of a minimum wage tends to exclude those who are not competent to earn that wage.

To raise the standard of living of certain of the lower stratums of society, ignoring the element of handicap among such persons, minimum-wage laws have been set up. It has been perhaps rather naïvely hypothecated that if a minimum wage was set in an industry the lower elements in society would be more or less automatically introduced to a higher scale of living. I have been unable to procure extensive data on this matter, which would seem to be elementary, and yet there is some reason to suppose that the setting of a minimum wage automatically discharges those persons who are not competent to earn this wage, thereby lowering their scale of living — in fact, reducing them to a welfare level, the jobs at higher wages being taken by persons coming in from horizontal positions who are capable of earning this wage. This is an example of an attempt to solve a social problem on theoretical grounds without adequate preliminary research. Lastly, the carrying of insurance against industrial accidents has led to a medical examination of applicants for jobs, and thereby tends to exclude any who may be considered accident prone. All these things have limited the fields of endeavor open to handicapped persons, especially the feebleminded.

The medical profession should furnish leadership in providing for the approximate 80,000 non-institutionalized feebleminded. Obviously, it is futile to think of institutional care for this vast throng for the reasons given above. The feebleminded tend to constitute a substantial part of the immobile elements in society, remaining a more or less permanent part of the sedimentary stratum and furnishing more than their share of disease, poverty and crime.

The Neurotic

Wherever large numbers of sick persons are found, there is an enormous amount of functional nervous disease. Estimates in large clinics, and in general practice, have run as high as 35 per cent.[26] This group is ill-defined. Gradually medicine has come to look on their trouble as in the emotional field, yet they run the gamut of clinics, have many operations, and are a very great load on organized medicine. If wealthy, they are received enthusiastically by the practicing physician, but they are looked on with consternation in the free clinics. Their difficulty is perhaps situational to some extent, and many of them appear to be mixed medical and social problems. Welfare lists contain the names of many persons who at one moment are considered malingerers, and another as afflicted with some physical disease. Although many psychologic and physiologic studies have been made on this group in the last few years, there are still inadequate data as to the natural history of such illnesses, and we are still lacking a good statement as to their place in the whole medical scheme of things. These illnesses tend to be chronic and disabling, and therefore frequently place their victims in the dependent group.

The Disordered Personalities

This group occupies a vague zone in the social hierarchy and is still ill-defined by the medical profession. It has to do with those persons who, through personal peculiarities, are unable to adjust and adapt themselves to the requirements of society, and so become social problems in one way or another. The morbidly contentious find it difficult to obtain employment. They are continually agitating, and nobody wants them. They are frequently found on relief, in prisons and even in hospitals for the insane. The inadequate personality often gives up without a struggle and is feebly resistant to alcohol, and the emotionally unstable are often incapable of sustained productive effort. This group not only forms an important component in definite social disorders, but makes up a large number of those who are found in clinics appearing on the surface as neurotic. Needless to say, many of these persons appear in the sedimentary stratum.

Psychiatrists have expressed a belief that if these individuals were properly handled as children much of their difficulty in adult life might be avoided. Whether this is true, experience alone can tell. Nevertheless, it is true that the under-

standing physician who has an attitude of detachment is a great help in handling such cases. There is a place for each one of these people in society, if such a place can be found, but without skilled advice and understanding, they form one of the most turbulent and distressing factions with which we have to deal. There is no estimate of their number except to say that it is very large. One study set the percentage of the inmates of a large prison to be classified as personality disorders as very high.

Drug and Alcohol Addiction

Addiction to habit-forming drugs, including alcohol, has long been considered a medical problem, and, in the past, there have been many programs under medical stimulus and leadership attempting to attack this problem in an intelligent way. We have no census of alcoholic patients, but every index tends to show the load to be tremendous. There are approximately 84,863 arrests in Massachusetts every year for drunkenness.[17] Thirty-two per cent of the patients admitted to the state hospitals are said to be intemperate.[27] Alcoholism has been shown to be a very large component in the admissions to the Boston City Hospital.[28]

There is no more discouraging problem with which to deal than that of alcoholism. The police handle the same cases over and over again. Certain persons have literally hundreds of sentences to jails and houses of correction. At the present moment, although there has been very recently a vigorous attempt to promote attention to this group, there is no state-wide program for prevention or cure, nor is there an adequate meeting of the minds of police, welfare and medical authorities. Quite a bit of the beneficent effort to raise the level of living of certain of the dependent groups is almost entirely vitiated through diversion of relief from the home to the saloon.

The drug problem is similar, but, of course, very much less flagrant. A surprising number of those who fail to meet their obligations in life are alcoholic and get into the sedimentary immobile stratum of society.

The Physically Diseased

I shall not attempt a wide discussion of the social problems of the physically ill, since much has been written on this subject of late. There are many data to indicate a greater incidence of disease among persons in the low-income groups. There has been a suggestion from some sources that ill health is due to inadequate medical care. This is a glorious tribute to the efficacy of medical practice, but has little basis in fact. It is well known that much of the reduction in disease has been due to sanitary measures, and that a relatively small amount has been due to curative medicine. Sanitation is almost entirely, at the present time, in the hands of the government, and the work of the practicing physician is largely in the field of curative medicine. However, there is a social component in the realm of physical disease that offers adventure in a somewhat new field.

It is estimated that 39 per cent of the population have some form of chronic disease that is disabling.[29, 30] Likewise, it is estimated that 3.1 per cent of the population are crippled to a point of being disabled.[31] Then, the blind and the deaf should be added to this total. As with the others, modern social trends have militated against the possibility that these individuals will sustain themselves, and it has tended to make the problem social as well as medical. The well-known tendency of certain persons with minor disabilities to exploit their illness as a means of gain should be noted. The rehabilitation of disabled persons, the organization of co-operative workshops where they may pursue some sort of gainful occupation, and the breaking down of prejudice, as well as the keeping up of the morale of handicapped persons, need medical participation.

One important group is that of the epileptic. It is estimated that 0.17 per cent of the population have occasional convulsions. Recent developments have shown that a large number of epileptics can be kept symptom-free under medication. The others find it difficult to sustain themselves and need great ingenuity in planning special programs.

The attitude of different persons toward disease is a well-known variable. One person losing a phalanx on the fifth finger tends to exploit this disability and retire from active duty, whereas another person puts off until too long, cutting down on vigorous effort.

* * *

From the above it would appear that throughout Nature there is a tendency on the part of individuals to form themselves into a social hierarchy according to their capacity. Likewise, there is a level at which survival is precarious. In human society, the destruction of the less capable is prevented by the efforts of the more capable. The least capable are handicapped by sickness, poverty and vice, and it is the task of organized society to care for them.

This is, in the main, a clinical problem calling for the use of the scientific method, that is, the method of diagnosis as a preliminary step to

treatment. There are extensive and intensive methods by which the problem can be attacked, analogous to sanitation and salvage in medicine. The medical profession has great opportunities as well as obligations in dealing with these matters since a professional personnel trained in scientific methods is available, and since, because of overlapping between these groups, it is inevitable that physicians participate in the solution of these problems.

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References

1. Cannon, W. B. *The Wisdom of the Body.* 312 pp. New York: W. W. Norton & Co., 1932.
2. Darwin, C. R. *The Descent of Man.* In 2 vol. 845 pp. New York: D. Appleton and Co., 1871.
3. Spengler, O. *Decline of the West.* Translated by C. F. Atkinson. 443 pp. New York: Alfred A. Knopf, 1926.
4. Sorokin, P. A. *Social and Cultural Dynamics.* In 3 vol. 2108 pp. New York: American Book Co., 1937.
5. Veblen, T. *The Theory of the Leisure Class.* 412 pp. New York: Vanguard Press, 1926.
6. Sorokin, P. A. *Social Mobility.* 559 pp. New York: Harper & Brothers, 1927.
7. Craster, C. V. and Haskin, A. H. Medical aspects of unemployable client for relief. *J. A. M. A.* 116:1897-1899, 1941.
8. Donaldson, W. F. Officers' Department. *Pennsylvania M. J.* 44:495-497, 1941.
9. *Social Statistics by Census Tracts in Boston: A method of neighborhood study.* 31 pp. Boston: Boston Council of Social Agencies, 1933.
10. Bartlett, J. *Social Action: Why and how.* 32 pp. Boston: Young People's Religious Union, 1940.
11. Thompson, W. G. Population trends and programs of social welfare. *Milbank Mem. Fund Quart.* 18:9-17, 1940.
12. Campbell, C. M. Selective service and psychiatric issues. *J. A. M. A.* 116:1883-1887, 1941.
13. Thom, D. A. *Everyday Problems of the Everyday Child.* 349 pp. New York: D. Appleton and Co., 1927.
14. Sweet, C., Jacobus, L. R. and Stafford, H. E. The child-parent relationship: the child in the family. *J. A. M. A.* 116:38-43, 1941.
15. Stieglitz, E. J. Potentialities of preventive geriatrics. *New Eng. J. Med.* (in press).
16. *Fifteenth Census of the United States, 1930.* Population, Vol. IV. 1796 pp. Washington: Government Printing Office, 1933. P. 687.
17. *Annual Report of the Commissioner of Correction.* 175 pp. Public Document No. 115, Commonwealth of Massachusetts, for the year ending December 31, 1939.
18. *Report on the Census of Unemployment in Massachusetts as of January 2, 1934.* 202 pp. Public Document No. 15, Commonwealth of Massachusetts.
19. Stearns, A. W. Homicide in Massachusetts. *Am. J. Psychiat.* 4:725-749, 1925.
20. *Social Statistics by Census Tracts in Boston.* Vol. II. 27 pp. Boston: Boston Council of Social Agencies, 1935. P. 14.
21. *Fourth Annual Report of the Trustees of the State Lunatic Asylum at Worcester.* 71 pp. Boston: Dutton & Wentworth, 1837.
22. Pollock, H. M. *Family Care of Mental Patients.* 247 pp. Utica: State Hospitals Press, 1936.
23. Gruener, J. R. *Feebleminded Children as a Massachusetts Problem.* 63 pp. Boston: Massachusetts Child Council, 1941.
24. *Report of the Mental Deficiency Committee.* 509 pp. London: His Majesty's Stationery Office, 1939.
25. Dayton, N. A. and Nugent, M. A. Community supervision of mental defectives in Massachusetts. *New Eng. J. Med.* (in press).
26. Pratt, J. H. The influence of emotions in the causation and cure of psychoneuroses. *Internat. Clin.* 4:1-16, 1934.
27. Dayton, N. A. *New Facts on Mental Disorders.* 486 pp. Springfield, Illinois: Charles C Thomas, 1940.
28. Moore, M. and Gray, M. G. Alcoholism at the Boston City Hospital. *New Eng. J. Med.* 221:45-61, 1939.
29. Bigelow, G. H. and Lombard, H. L. *Cancer and Other Chronic Diseases in Massachusetts.* 355 pp. Boston: Houghton Mifflin Co., 1933.
30. Boas, E. P. *The Unseen Plague: Chronic disease.* 121 pp. New York: J. J. Augustin Inc., 1940.
31. Lynch, D. L. Employment of physically handicapped. *J. A. M. A.* 116:1380-1383, 1941.

OBSERVATIONS AND SUGGESTIONS CONCERNING NEUROPSYCHIATRIC EXAMINATIONS FOR THE ARMY OF THE UNITED STATES*

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BOSTON

SINCE August 27, 1940, a modified state of national emergency has existed in the United States.[1] Under the circumstances, it has become necessary for large numbers of young men to enter the Army of the United States. All candidates for the Army are subjected to various examinations to eliminate those who are unfit for military service. One of the most important of the examinations is the neuropsychiatric evaluation of the candidate.

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A review of the neuropsychiatric problems during World War I may suggest the magnitude of the present problem.[2-6] In 1916, just before the entry of this country into the war, one tenth of all discharges from the Regular Army were for neuropsychiatric disorders. This discharge rate was three times that of the hospital admission rate of the adult population of New York State for the same disorders.[3] In 1917 and 1918, 3,500,000 soldiers who had been passed by local examining boards and admitted to the Army subsequently underwent special examination. Almost 2 per cent (69,394) of these men were found to be suffering from neuropsychiatric disabilities.[4] What is more significant is that 96 per cent of these disabilities were considered to have arisen *not* in the line of duty. Available data on 50,000 of these men revealed that 85 per cent began their neuropsychiatric disorder at least five years before entering federal service. Forty per cent (27,000) were detected during preliminary physical examinations in the Army after having been

passed by their local examining boards. Thirty-two per cent (22,000) were revealed by consultation with medical officers of their units, and 24 per cent (16,000) were discovered by their commanding officers. Unfortunately, many officers were commissioned who later proved to have nervous and mental defects. The total 69,394 cases were divided as follows: mental deficiency, 31 per cent; neurosis, 17 per cent; psychosis, 11 per cent; nervous disease and injury, 10 per cent; epilepsy, 9 per cent; "constitutional psychopathic inferiority," 9 per cent; endocrinopathy, 7 per cent; drug and alcohol addiction, 6 per cent.[4] During the war, all groups constituted a major problem. After the war, psychoses became the major problem. In March, 1921, 70 per cent of all neuropsychiatric cases under observation were psychoses. By 1927 almost 50 per cent of all patients receiving hospital treatment as beneficiaries of the United States Veterans Bureau were neuropsychiatric cases.[3] It has been estimated that each such case has cost approximately $30,000 to date.

These are the conditions resulting from the examinations of 1917 and 1918. Since then an appreciation of neuropsychiatric principles and practice has become more widespread in military circles. Unfortunately, the rigors of warfare have increased with advancing knowledge. Military service today demands more emotional stability and intellectual activity than ever before. The coordination of the soldier is of vital importance in these days of carefully synchronized mechanical operations. Equally important is his ability to act intelligently and with initiative in small independent units. Therefore, the demands on the neuropsychiatrist have increased proportionately.

The duty of the neuropsychiatric examiner is multiple. First, he must eliminate those who, because of demonstrable organic or less clearly defined functional abnormalities of the nervous system, are unable to perform their appointed tasks. Secondly, he should ascertain whether the candidate is vocationally fit for the duties of a modern soldier. Finally, he is asked to consider whether the candidate will remain useful during his ten years' reserve duty following the initial training period. This is no simple task. Careful scrutiny of each candidate is required. At least one hour is necessary to perform a reasonably adequate personality estimate. The present emergency demands examination of large numbers of men. Hence, it is impossible to maintain the usual standards of neuropsychiatric examination. Because of the present emergency a compromise must be made.

When it is realized that the general practitioner of the local selective-service board is allotted approximately thirty minutes for a complete examination and the specialist on the induction board from five to ten minutes for neuropsychiatric evaluation, the task seems insurmountable; fortunately, it is not. A reasonable compromise may be reached between perfection and failure to fulfill the purpose of the examination. Bearing in mind the existence of a national emergency and the present organization of the mobilization system, the results obtained under these circumstances have suggested methods whereby such a compromise can be reached. It is the purpose of this article to present observations and suggestions derived therefrom, based on the examination of 5550 candidates from the Fourth Recruiting District (Boston Area). These included 4393 selective-service candidates, 750 National Guardsmen and 407 recruits for the Regular Army.

Under the present system of mobilization there are three channels through which the Army is rapidly increasing its man power (Fig. 1). The first is by means of enlistment in the Regular Army. Except for potential pilots in the air force, medical specialists are not routinely employed for the examination of candidates before induction into the Regular Army. Enlisted recruits are examined by officers of the Army Medical Corps. There is no examination by a neuropsychiatrist. Examination of recruits for the Regular Army has not revealed a significant proportion of neuropsychiatric disorders. Within the last six months, one of us (G. O. P.), together with two other officers of the Army Medical Corps, examined, among others, a group of 407 recruits from the Boston Area. None of the examining officers had received special instruction in neuropsychiatry. They rejected 0.7 per cent of the recruits for neuropsychiatric disabilities. Three months later 405 volunteers were examined by the neuropsychiatrists of the Boston Area Induction Board. The rejection rate for neuropsychiatric disorders in this group was 3.2 per cent. The two classes of volunteers were in the same age, racial, social and geographic groups. They differed in that the men in the second class had been pronounced normal in all respects by the examiners of the local boards whereas those in the first were entirely unselected. It is to be expected that fewer neuropsychiatric disorders would be present in the latter (selected) group of candidates. Nevertheless, trained neuropsychiatrists discovered approximately five times as many neuropsychiatric disorders. Similar examination of applicants for the Regular Army by

trained neuropsychiatrists might uncover neuropathic or psychopathic traits in many of the applicants who are now accepted for service.

The second channel of entry into the Army is by induction of National Guard units. National guardsmen have received a general physical examination before admission into their units. Here again, medical specialists are not routinely employed for the detection of disabilities. On the other hand, the men have been subject to scrutiny by their officers during their training periods. This constitutes an additional opportunity for detecting gross disabilities. Finally, before induction into the Army, the guardsmen are subjected to examination by a medical board some of whose members may be specialists. During recent inductions of National Guard units an appreciable amount of disability was discovered by the medical induction boards. One such board inducting Massachusetts units was composed of nine examining officers, one of whom happened to be a neuropsychiatrist (M. J. F.). The latter interviewed approximately 750 men in seven days, or slightly over 100 men per day. Although an experienced and qualified neuropsychiatrist, he was able to make no more than a cursory evaluation of each candidate. Even under these conditions a percentage of 0.8 of rejectable neuropsychiatric disabilities was uncovered. Thus a single experienced specialist was able to discover the same

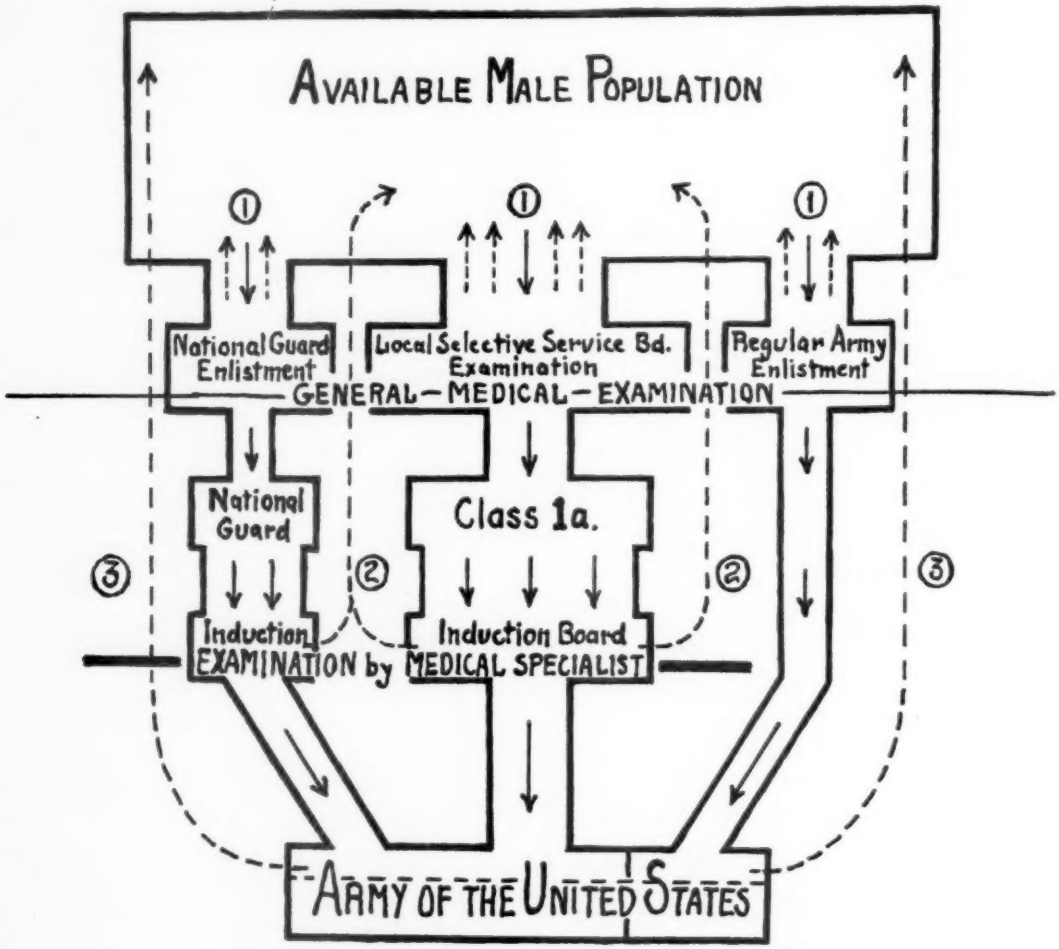

FIGURE 1. *Channels of Entry into the Army of the United States.*

(1) *Selection of candidates by means of general medical examination by local practitioners.*

(2) *Further selection of candidates through induction-board examinations by medical specialists, including examination by neuropsychiatrist.*

(3) *Further examination and rejection, if necessary, without benefit of governmental care and treatment, for neuropsychiatric disabilities incurred before entrance into the Army or within the first six months after entrance.*[10]

Members of the Regular Army constitute a separate unit within but not a part of the Army of the United States.

amount of neuropsychiatric disorders in a group of previously examined men as had been uncovered by three general practitioners in an unselected group (Regular Army recruits). It is probable that more careful examination of the National Guard group might have revealed additional disabilities.

The third and largest portal of entry into the Army is through the Selective Service Act of September 16, 1940. A man who is called for service is subject to the following routine: Investigation of social and occupational status; call for examination according to his order number; general physical examination by the medical examiner of the local selective-service board; reference of the candidate to a medical advisory board for consultation in doubtful cases; examination by an induction board of medical specialists if the candidate is placed in Class 1-A by the local board; acceptance or rejection by the induction board for general active military service; if the candidate is rejected, return to the local board for reclassification or for re-examination by a medical advisory board; possible return to the induction board if placed in Class 1-A by the advisory board.

There are approximately 6400 local selective-service boards in the United States. There are 173 in Massachusetts. The medical examinations for these boards are performed by local general practitioners, surgeons or internists as a gratuitous, voluntary service. The presence of specialists on such boards is unusual. By March 1, 1941, 457 physicians had been appointed to these boards in Massachusetts. There are from one to five examiners on each board. Each physician examines from three to five men per day when on duty with the board. The number examined varies with the quota of the board in question. Since most of this work must be done in addition to his usual practice, the examiner expends about thirty minutes per candidate. During this time a complete physical examination and personality estimate of the candidate are expected from the examiner. In the neuropsychiatric field especially, this is no trivial task. Judging by the rejection rates maintained by the majority of the local selective-service boards in Massachusetts the local examiners are performing an excellent service to the nation. If there is any criticism, it is that additional stress might be placed on the neuropsychiatric aspects of these initial examinations.

The general practitioner on the local board possesses certain advantages over the specialists of the induction boards. The local examiner has more time with each candidate. The alert physician may learn a great deal about a candidate's personality and background in a half-hour interview. Social agencies may be called on to investigate home, school, court, welfare and hospital records, when necessary. Consultations from a medical advisory board are available in doubtful cases. By utilizing their advantages the examiners on local boards are in a position to save both the Government and the candidate a great deal of time, effort, confusion, expense and disappointment.

Medical examination by the local boards is intended to exclude all those who are unfit for general active military service. The criteria for such exclusion are listed in the Mobilization Regulations (M. R. 1-9) of August 31, 1940. An analysis of the rejection rates from 124 of the 173 local boards in Massachusetts has shown that from 30 to 87 per cent of the candidates have been rejected for various defects. The average rejection rate is 58.5 per cent. It is estimated that about 9 per cent of the candidates were rejected because of neuropsychiatric disorders.

Medical advisory boards have been organized as a consultation service for the local boards. There is approximately one medical advisory board for every ten local boards, or about 640 in the United States. There are 15 such boards in Massachusetts. The medical advisory boards are composed of a group of outstanding specialists in the community. Their services are offered for consultation on request by the chairmen or examiners of the local boards. Not many men are examined by the neuropsychiatric consultants. Therefore, they are often able to spend several hours or more evaluating the doubtful cases. Electroencephalography, lumbar puncture and other laboratory technics may be employed by these boards when indicated. Expert neuropsychiatric consultations are made available by these boards. It is probable that, if more such consultations were requested, fewer candidates would be rejected by the induction boards.

The medical induction boards are the final barrier before actual entrance into the Army. There are three such boards in Massachusetts. These are composed of specialists who re-examine all candidates placed in Class 1-A by the local medical examiners. The Boston Area Induction Board, with which this report is primarily concerned, has been active since November 18, 1940. It is composed of a medical director from the Army Medical Corps and his military and civilian assistants. In March, 1941, the civilian advisory component of the board consisted of a clinical pathologist, an oral surgeon, an otolaryngologist, an ophthalmologist, an orthopedic surgeon, a gen-

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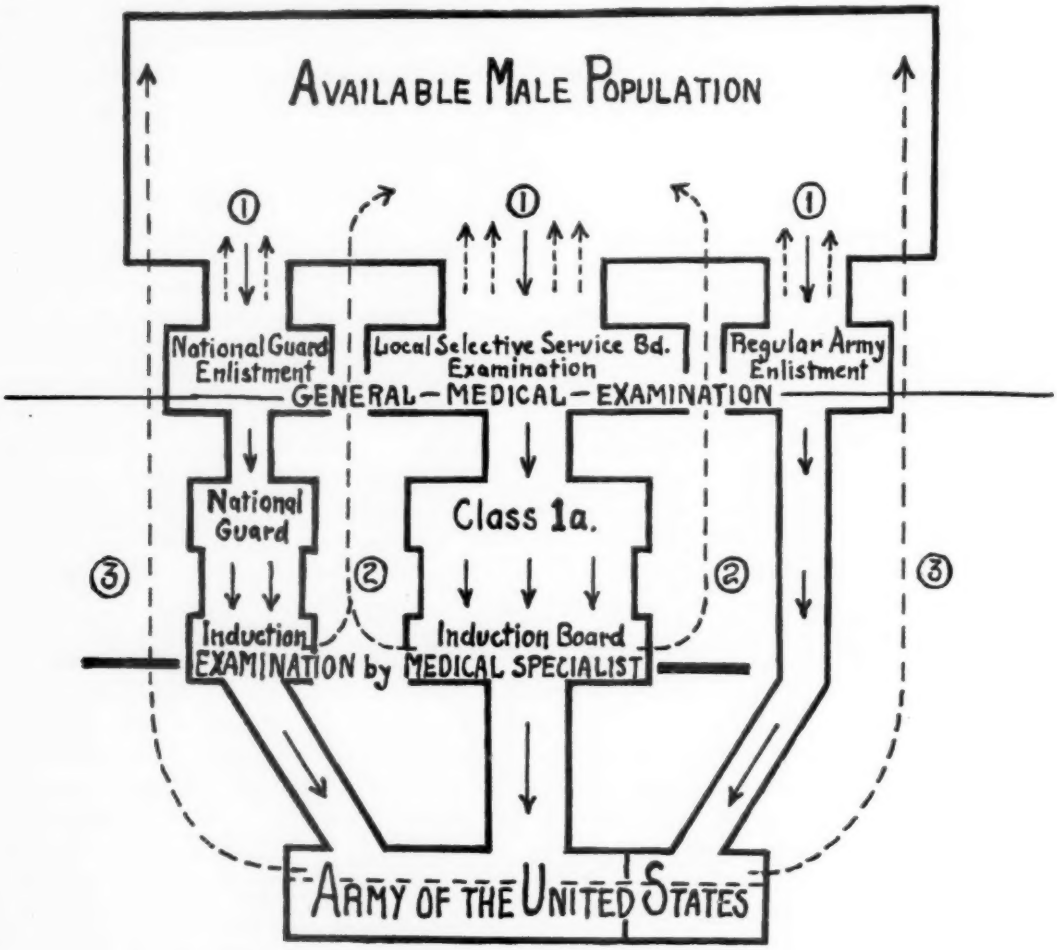

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The third and largest portal of entry into the Army is through the Selective Service Act of September 16, 1940. A man who is called for service is subject to the following routine: Investigation of social and occupational status; call for examination according to his order number; general physical examination by the medical examiner of the local selective-service board; reference of the candidate to a medical advisory board for consultation in doubtful cases; examination by an induction board of medical specialists if the candidate is placed in Class 1-A by the local board; acceptance or rejection by the induction board for general active military service; if the candidate is rejected, return to the local board for reclassification or for re-examination by a medical advisory board; possible return to the induction board if placed in Class 1-A by the advisory board.

There are approximately 6400 local selective-service boards in the United States. There are 173 in Massachusetts. The medical examinations for these boards are performed by local general practitioners, surgeons or internists as a gratuitous, voluntary service. The presence of specialists on such boards is unusual. By March 1, 1941, 457 physicians had been appointed to these boards in Massachusetts. There are from one to five examiners on each board. Each physician examines from three to five men per day when on duty with the board. The number examined varies with the quota of the board in question. Since most of this work must be done in addition to his usual practice, the examiner expends about thirty minutes per candidate. During this time a complete physical examination and personality estimate of the candidate are expected from the examiner. In the neuropsychiatric field especially, this is no trivial task. Judging by the rejection rates maintained by the majority of the local selective-service boards in Massachusetts the local examiners are performing an excellent service to the nation. If there is any criticism, it is that additional stress might be placed on the neuropsychiatric aspects of these initial examinations.

The general practitioner on the local board possesses certain advantages over the specialists of the induction boards. The local examiner has more time with each candidate. The alert physician may learn a great deal about a candidate's personality and background in a half-hour interview. Social agencies may be called on to investigate home, school, court, welfare and hospital records, when necessary. Consultations from a medical advisory board are available in doubtful cases. By utilizing their advantages the examiners on local boards are in a position to save both the Government and the candidate a great deal of time, effort, confusion, expense and disappointment.

Medical examination by the local boards is intended to exclude all those who are unfit for general active military service. The criteria for such exclusion are listed in the Mobilization Regulations (M. R. 1-9) of August 31, 1940. An analysis of the rejection rates from 124 of the 173 local boards in Massachusetts has shown that from 30 to 87 per cent of the candidates have been rejected for various defects. The average rejection rate is 58.5 per cent. It is estimated that about 9 per cent of the candidates were rejected because of neuropsychiatric disorders.

Medical advisory boards have been organized as a consultation service for the local boards. There is approximately one medical advisory board for every ten local boards, or about 640 in the United States. There are 15 such boards in Massachusetts. The medical advisory boards are composed of a group of outstanding specialists in the community. Their services are offered for consultation on request by the chairmen or examiners of the local boards. Not many men are examined by the neuropsychiatric consultants. Therefore, they are often able to spend several hours or more evaluating the doubtful cases. Electroencephalography, lumbar puncture and other laboratory technics may be employed by these boards when indicated. Expert neuropsychiatric consultations are made available by these boards. It is probable that, if more such consultations were requested, fewer candidates would be rejected by the induction boards.

The medical induction boards are the final barrier before actual entrance into the Army. There are three such boards in Massachusetts. These are composed of specialists who re-examine all candidates placed in Class 1-A by the local medical examiners. The Boston Area Induction Board, with which this report is primarily concerned, has been active since November 18, 1940. It is composed of a medical director from the Army Medical Corps and his military and civilian assistants. In March, 1941, the civilian advisory component of the board consisted of a clinical pathologist, an oral surgeon, an otolaryngologist, an ophthalmologist, an orthopedic surgeon, a gen-

eral surgeon, a psychometrist, three internists and five neuropsychiatrists. At the beginning, 100 men were examined each day. By February, the number had increased to 250. Approximately 4400 candidates were examined on twenty-two days between November 18, 1940, and February 18, 1941. The results are summarized in Table 1. The

TABLE 1. *Analysis of Rejections by the Boston Area Induction Board.*

	NOVEMBER	JANUARY	FEBRUARY	TOTAL
Candidates examined	405	1254	2746	4405
Candidates rejected	95	257	462	814
Percentage rejected	23.4	20.5	16.8	18.4
Disabilities causing rejection (per cent): —				
Dental	10.8	5.1	3.0	
Ocular	1.7	2.5	1.6	
Ear, nose and throat	1.4	0.9	1.6	
Orthopedic	1.2	1.1	0.3	
Surgical	1.7	1.7	2.1	
Medical	2.7	6.0	1.2	
Clinicopathological	0.2	0.1	0.3	
Neuropsychiatric	3.2	2.8	5.8	4.5
Percentage of total rejections for neuropsychiatric reasons	13.8	13.7	34.5	24.5

neuropsychiatric disorders by reason of which rejection was recommended are listed in Table 2.

TABLE 2. *Neuropsychiatric Rejections by the Boston Area Induction Board among 4405 Candidates.*

DIAGNOSIS	NO. OF CASES	PER CENT		
Mental deficiency	34	16.2	16	
Manic-depressive psychosis	6	2.8		
Schizophrenia	3	1.4		
Insanity of undetermined type	1	0.4	5	
Constitutional psychopathic inferiority	30	14.3		
Schizophrenic personality	14	6.7		
Psychoneuroses (all types)	57	27.2		
Neurocirculatory asthenia	12	5.7	54	
Undesirable traits (Sect. VIII)	2	0.9		
Chronic alcoholism	12	5.7		
Stammering	1	0.4	7	82
Post-traumatic syndromes	5	2.3		
Fröhlich's syndrome	1	0.4		
Cushing's syndrome	1	0.4		
Ménière's syndrome	1	0.4		
Migraine (incapacitating)	4	1.9		
Epilepsy	9	4.2		
Multiple sclerosis (?)	7	3.3		
Encephalopathy of unknown origin	2	0.9		
Neuromuscular atrophy	1	0.4		
Neuromuscular paralysis	5	2.3		
Sciatica	1	0.4	18	18
Total	209			

Because the final decision with regard to rejection or acceptance and also the choice of primary and secondary causes for rejection lies, not with examining specialists, but with the medical director of the board, a further analysis is made in Table 3.

Twenty-seven neuropsychiatrists have been employed on the induction board for from one to three days each week. During February, five were on duty each day. Each neuropsychiatrist examined an average of 50 men per day, varying from 35 to 70 according to the individual capacity of the examiner. The board sat about five hours each day. Therefore, the average time for examination of each candidate was six minutes. The time for examination varied from three minutes for evaluating a normal candidate to ten or fifteen minutes for considering a doubtful case.

It has been said that the neuropsychiatrists on induction boards should insist on a minimum of fifteen minutes for each candidate.[7] Under the present induction system this is impossible. Examination of 50 candidates at fifteen minutes apiece would require twelve and a half hours. Since it is necessary to deliver the candidates to the reception center on the day of induction, it has been impossible to expend more than five or six hours each day. Experience has shown that no one neuropsychiatrist can do justice to more than 10 men per hour, or more than 50 a day. To enlarge the neuropsychiatric component of the board might cause an undue strain on those available for such duty. Therefore, the problem of the neuropsychiatrists serving on induction boards is to work out a general scheme that may be varied by each examiner in such a fashion as to produce the most effective evaluation in the least amount of time.

As has been stated, a situation exists in which a compromise must be made between thorough and inadequate neuropsychiatric examination of candidates for the Army of the United States. The foregoing outline of the situation and the results obtained to date have led to certain suggestions whereby a practical solution may be reached. Certain general principles must be kept in mind by all examiners. First, because of the national emergency, individual interests must, for the time being, yield to the collective interests of the nation. Secondly, at the present stage of military expansion, the Army needs men who are sound in mind and body. The common fallacy that "the Army will make a man of Johnny" has no place in the present system. The Army is an organization for the defense of the nation and is not to be considered a corrective institution. Thirdly, there are approximately seventeen million eligible men from whom to choose an army of from two to four million men. Finally, the admission of undesirable candidates to the Army not only decreases the efficiency of this branch of defense but also increases the burden on the nation through support of these men by the Army or the Veterans Bureau.

An estimate should be made to determine whether the candidate is vocationally fit for the life of a modern soldier and whether he is mentally durable. Therefore, it is essential that the

medical examiners of the various boards familiarize themselves, so far as possible, with the essentials of neuropsychiatric evaluations,[2–6] the neuropsychiatric requirements for admission to the Army[8] and the fundamentals of neuropsychiatric examination.[9] Important signs of instability are addiction to drugs or alcohol, chronic complaints, gastric neuroses, cardiac anxiety, litigation neuroses, frequent change of occupation or residence, easy fatigability, repeatedly poor scholastic record, prolonged enuresis, urinary dribbling, lack of acquaintances, withdrawal from social contacts, fanatic beliefs and overly aloof attitude during examination. Direct questioning regarding head trauma, unconsciousness, convulsions and nervous breakdowns will often reveal disqualifying disorders. Alert observation of the candidate will often lead the examiner to suspect, if not to discover, disabling personality disorders. Whenever such a suspicion arises, a consultation from a medical advisory board is indicated. Several neuropsychiatrists on advisory boards have expressed the opinion that their services are not requested so frequently as might be expected.

The problem confronting the neuropsychiatrist on the induction board is how to make the best decision in the time allowed. A sample neuropsychiatric interview is appended to this article. This is in no sense an attempt at standardization of technic, nor is it offered in the sense of a new approach to the problem. The interview, as outlined, is merely a summary of the type of examination used most frequently by various members of the board. Each examiner uses his particular variant, which he changes to suit individual situations.

Using some variation of the outlined interview as a basis for examination, the neuropsychiatrist employs his power of observation and his previous experience in evaluating the capabilities of the candidate. In doubtful cases a brief consultation with a fellow examiner usually results in a deci-

TABLE 3. *Neuropsychiatric Abnormalities Noted in Examination by the Boston Area Induction Board of 2511 Candidates, February, 1941.*

Type of Disorder	Considered Sufficient Cause for Rejection by Neuropsychiatrist			Not Considered Sufficient Cause for Rejection by Neuropsychiatrist	Total
	No. of cases	No. rejected by medical director	No. accepted by medical director		
Mental deficiency	26	20	6	0	26
Borderline intelligence	17	0	17	11	28
Manic-depressive psychosis	8	4	4†	5†	13
Schizophrenia	3	1	2	0	3
Insanity of undetermined origin	1	1	0	0	1
Constitutional psychopathic inferiority	38	28	10	6†	44
Schizophrenic personality	15	10	5	0	15
Psychoneuroses (all types)	64	48	16	25†	89
Neurocirculatory asthenia	11	11	0	0	11
Autonomic instability	0	0	0	2	2
Undesirable traits (Sect. VIII)	1	1	0	0	1
Acute alcoholism	0	0	0	13	13
Chronic alcoholism	20	8	12	14	34
Post-traumatic syndromes	5	5	0	10	15
Cerebral birth injury	0	0	0	1	1
Encephalopathy of unknown etiology	1	0	1	0	1
Multiple sclerosis (?)	6	5	1	0	6
Absent abdominal reflexes	0	0	0	4	4
Single Babinski reflex	0	0	0	4	4
? Nervous-system syphilis	0	0	0	5†	5
Adie's syndrome	0	0	0	6*	6
Absent tendon reflexes	0	0	0	3	3
Unequal pupils	0	0	0	12	12
Extraocular muscle palsies	0	0	0	8	8
Exophthalmos	0	0	0	2	2
Facial palsies	0	0	0	4	4
Neuromuscular paralyses	4	4	0	1	5
Neuromuscular atrophies	1	0	1†	1	2
Cushing's syndrome	1	1	0	0	1
Fröhlich's syndrome	1	1	0	0	1
Ménière's syndrome	1	1	0	0	1
Migraine (severe)	5	3	2†	5†	10
Headaches (frequent)	1	0	1	3	4
Epilepsy	10	6	4†	5†	15
Syncope	3	0	3	13	16
Sciatica	1	0	1	1	2
Back injury	0	0	0	4	4
Kyphosis and scoliosis	0	0	0	5	5
Stammering	1	1	0	6	7
Totals	245	159	86	179	424

*One of these was rejected by the medical director.
†Indicates some question by neuropsychiatrist as to diagnosis.

sion. When necessary, the services of the psychometrist are utilized. At times a consultation with the medical director is useful. In cases in which special technics are necessary for a decision, the candidate is either held for such tests at a later date or rejected with the recommendation that he appeal to a medical advisory board through his local board. In any case of doubt, the question is a matter not so much of diagnosis as of whether the candidate in question will make a good soldier and whether he is mentally durable.

The monotony of the routine, in addition to the continuous rapid interviews, tends to dull the examiner's clinical perception. This is significant because the entire value of the examination depends on the examiner's clinical judgment. Therefore, it is recommended that each neuropsychiatrist examine no more than 10 men per hour, nor more than 50 men per day. Three days out of each week is apparently the maximum effective time available for the average experienced neuropsychiatrist.

Summary

A state of national emergency exists, which requires the entry of large numbers of young men into the Army of the United States. All such candidates are examined in order to eliminate those who are unfit for military service. One of the more important of these examinations is the neuropsychiatric evaluation. A review of the neuropsychiatric problems occasioned by World War I suggests the magnitude of the present problem. Modern warfare demands even greater intellectual and emotional stability in the armed forces. Hence the importance of the neuropsychiatric examinations has increased proportionately. Owing to the limited time available for such examinations, a compromise must be reached between perfection and failure to discover neuropsychiatric disabilities. Certain observations based on examination of 5550 candidates from the Boston Area have suggested means whereby such a compromise may be reached.

Under the present mobilization system there are three channels of admission to the Army. With the exception of the air force, volunteers for enlistment in the Regular Army are not examined by a neuropsychiatrist. A comparison of the number of neuropsychiatric disabilities discovered under the present enlistment system, with the number revealed by trained neuropsychiatrists, suggests that a more thorough examination of the recruits is advisable. Although national guardsmen are examined several times before induction into the Army, a neuropsychiatric evaluation is not routinely employed. Examination of a group of guardsmen by a neuropsychiatrist revealed that it would be advisable to place more stress on this aspect of the examinations.

Candidates for admission to the Army under the Selective-Service Act are examined at least twice before induction. Examinations by the general practitioners, internists and surgeons serving on the local selective-service boards are sufficiently thorough to discover most of the rejectable disabilities. Examinations by the local boards of Massachusetts have resulted in a rejection of approximately 60 per cent of all candidates examined. It is estimated that about 15 per cent of the rejectees, or 9 per cent of all selectees, were not accepted because of neuropsychiatric disabilities. The medical specialists of the induction board have discovered disabilities in about 20 per cent of the candidates passed by the local boards. Rejection by the induction board for neuropsychiatric disabilities has been only 2 per cent of all selectees; nevertheless, one quarter of the rejections by the induction board has been for neuropsychiatric disabilities. This implies that neuropsychiatric evaluation of the candidates is least thorough by the local boards and most exacting by the specialists on the induction boards. It is therefore suggested that more emphasis might be placed on the neuropsychiatric evaluation of the candidates in their initial examinations and that a final evaluation by trained neuropsychiatrists is necessary to eliminate the less readily detectable but equally important abnormalities.

Certain suggestions are made concerning the technic of a compromise neuropsychiatric evaluation, based on observations made during the examination of 5550 candidates for the Army of the United States.

Only time will tell whether the results of the present mobilization system are worth the care and effort expended. No final conclusions may be drawn from the observations presented in this survey.

References

1. Public Resolution No. 96, Seventy-Sixth Congress, August 27, 1940.
2. Williams, F. E. Introduction. In *The Medical Department of the United States Army: Neuropsychiatry* (Vol. X). 534 pp. Washington: Government Printing Office, 1929. Pp. 1-3.
3. Bailey, P. Detection and elimination of individuals with nervous and mental diseases. *Ibid.*, pp. 57-86.
4. Bailey, P. and Haber, R. Occurrence of neuropsychiatric diseases in the army. *Ibid.*, pp. 151-156.
5. *Idem:* Analysis of special neuropsychiatric reports. *Ibid.*, pp. 157-269.
6. Love, A. G. and Davenport, C. B. *Defects Found in Drafted Men.* 1663 pp. Washington: Government Printing Office, 1920.
7. Sullivan, H. S. A talk delivered at a seminar for Selective Service psychiatrists, Boston, January 30, 1941 (unpublished).
8. Mobilization Regulations (1-9), August 31, 1940. Sect. XIX.
9. Henderson, D. K. and Gillespie, R. D. *Text-book of Psychiatry for Students and Practitioners.* Fifth edition. 667 pp. New York and London: Oxford University Press, 1940.
10. United States Army Regulations (600-500), November 20, 1939. Paragraph 2, C (1).

ADDENDA

Sample Neuropsychiatric Interview

The following description may give the impression of a lengthy procedure. In practice, the interview may be completed in three minutes with a normal subject. Additional examination and questioning are often necessary, and should not be neglected for the sake of speed in examination. The subject should be carefully observed in every movement and response from the moment he enters the examining room to the moment he leaves. Careful observation of the subject's behavior often yields more clues to abnormalities than the formal examination itself. The examiner should sit with a cloth over his lap about six feet from and facing the door. A desk or table is placed at his right, for instruments and papers. A straight chair is supplied for the subject about three feet in front of and slightly to the left of the examiner. The subject arrives nude or clad in shoes and bathrobe. The following routine ensues:

"Come right in. Put your papers on the table." Shake hands with the subject. "Take off your robe and shoes. Put them on the chair in the corner." Observe physique, co-ordination, mannerisms and behavior.

"Stand here, toes on the line, toes and heels together. Close your eyes. Stand steady." Push the subject. "Open your eyes. Stand on one foot; on the other." Observe equilibrium, Romberg and response to push. The latter is especially significant in neuroses and malingering. Elicit abdominal reflexes.

"Sit down. Put your feet on my lap, legs extended. Hold your legs still." Perform Babinski maneuver. "Put your feet down, toes and heels together. Put your hands in your lap." Elicit ankle, knee, wrist, biceps and triceps reflexes. During elicitation of reflexes ask: "Have you any trouble with your hands, feet, legs or arms? Have you any numbness or tingling sensations anywhere? Are you troubled with headaches? Backache? Dizzy spells? Stomach trouble? How is your appetite? Do you sleep well? Have you ever been unconscious or fainted? Have you ever been knocked out or had your head hurt?" If so, ask concerning frequency, sequelae, last time it occurred and so forth. "Has anyone in your family ever had fits, spells, spasms, convulsions or epilepsy? Have you? Has anyone in your family ever had mental trouble or been in a state hospital because of trouble with his mind? Have you? Have you ever had any nervous or mental breakdowns? Do you get excited easily? Have blue spells? Hold your temper well? How do you get along with the girls? Do you drink? How often do you get drunk? Do you ever have to be taken home? Were you ever arrested for being drunk? Why are you joining the Army?" When said in a friendly curious fashion, the answer to the last question is extremely helpful in evaluating the personality.

Examine the pupils for size, shape, equality and reaction to light and accommodation. Say: "Show me your teeth. Open your mouth wide. Put your tongue out. Back in." Observe facial muscles for action, tremor and so forth.

Have the subject perform finger-nose test with both hands, eyes open and eyes closed, and then say: "Grip my hands hard and when I say three, let go suddenly. Grip! one, two, four, six, three!" Observe co-ordination, strength and tonus. "Put on your shoes and robe." While he is doing so, ask the subject: "How far did you go in school?" If a graduate of high school or college, ask present occupation. If not: "Why did you stop at (the grade)? Did you repeat any grades? Why?" At this point, if indicated by school record or behavior of the subject, ask suitable questions from the Kent Ten Minute Oral Intelligence Test or similar tests. If the examiner suspects that the candidate's mental age is below requirements, he is referred for psychometry. (Candidates with a mental age of less than ten years were considered unfit for the complicated duties of modern warfare.)

PSYCHOMETRICS AT AN ARMY INDUCTION CENTER

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BOSTON

IN NOVEMBER, 1940, induction of selective-service men into the Army of the United States began in Massachusetts. The final physical examination of the selectees was carried out at one of three induction boards. The men who came to the Boston Induction Board had been accepted by the various local boards and had ordinarily left their work, taken leave of their families and expected to go directly on to camp on the same day. The medical board making the final physical examination consisted of a group of specialists, all co-ordinated by and under the direction of a medical officer of the Regular Army.§ Among this group of specialists were neuropsychiatrists, whose function it was to give an evaluation of the nervous and mental status of each selectee before this induction.

It became quickly apparent to the physicians conducting this portion of the examination that an essential part of the procedure, in many of the cases, must be concerned with evaluation of "intelligence." The clinical estimate of a psychiatrist of long experience was, of course, of the greatest importance. However, the average time available for each selectee for complete neurologic and psychiatric examination was only six minutes. The large number of men examined in quick succession made it desirable that some more or less objective measure of intelligence level be available in the more doubtful cases. At first, partly by the chance that a copy was in the possession of one of the examiners, the Kent Emergency Ten-Minute Oral Test was used. This was extremely helpful, but it soon became apparent that the answers to the comparatively small group of questions were being passed around from one selectee to another in the dressing rooms; and in addition, even the short time required for this scale interfered with the ability of the neuropsychiatrist to examine the number of men required in the given time, to keep up with the other specialists and to enable the board as a whole to function efficiently.

Decision on each man had to be made immediately, since the selectee was either accepted, sworn in and sent to camp that same day, or rejected and sent back to his home. The requirements seemed to be for an objective procedure, well standardized, sufficiently varied to allow for great inequalities of education, sufficiently multiple to avoid the danger of dressing-room discussion, and capable of being administered in a comparatively short time. The basic question is not one of "mental age," still less of "intelligence quotient," but, Is this person's capacity in these respects sufficient for the demands that will be made on him by the Army?

Consequently, one of us (W. B.) sought the assistance of a group of psychologists, consisting of Messrs C. R. Atwell, F. L. Wells, H. Barry, E. A. Lincoln, R. C. Moore, H. C. Patey, L. S. Trowbridge and N. Y. Wessel. This group volunteered to organize a procedure¶ that would answer the above requirements. Not all the selectees appearing before the induction board were examined by the psychologist. Only those were referred who, in the opinion of one of the examining neuropsychiatrists, were below the critical level of capacity for Army demands. The psychologist administered the tests and noted his results, and the selectee was then sent back to the referring physician, who made the final recommendation of acceptance or rejection, on the basis of the test and clinical judgment. Final action on the recommendation lay, of course, in the hands of the Army officer who was medical director of the board.

The chief problem for the group in considering the technics to be used was the limited amount of time available for individual examinations. The question of group tests was naturally considered, but these were looked on as impracticable for both administrative and technical reasons. It was originally believed that the verbal items of the Wechsler–Bellevue Intelligence Scale, supplemented by a vocabulary test, and alternate arithmetic questions from the Alpha Test, would be satisfactory for those cases in which verbal tests could be justified. The selection of nonverbal tests caused more difficulty, but it was expected that the Beta Block Counting Test, the eleven, twelve and fourteen year levels of the Porteus Mazes, and the third, fourth and sixth designs of the Wechsler–Bellevue Block Design Test would be relatively useful.

The original objective was the determination of

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§A more complete exposition of the general scheme is contained in a paper by von Storch, Pratt, Farrell, Currier and Viets in this issue of the *Journal*.

¶Acknowledgment is hereby made to the medical officers of the First Corps Area and of the Boston Area Induction Board for their co-operation in permitting the setting up of this experimental procedure.

"mental age"* about a critical level of twelve years; the cases seen were referred by the psychiatrists as questionable from this standpoint.

Experience brought about a number of modifications in this outlook. It was naturally easiest to deal through brief examination with the relatively few candidates who were of low (under ten years) mental age or high (over fourteen years). Those who constituted by far the greatest number of referrals (mental age scores between eleven and thirteen) formed the major problem. Short cuts, such as printed self-administering material, were generally unsatisfactory, since the subject's performance was unduly handicapped by printed instructions. A probable explanation of this is infrequency of reading among the population examined, with the consequent lack of facility with a comparatively little used skill. The lack of nonverbal material that would be adequate and not time-consuming was keenly felt, not only with selectees with foreign backgrounds but also with many who lacked skill with their own language. One example of this difficulty was an American-born man who went through the sixth grade of grammar school, but scored only at the ten-year level on verbal tests, although he rated fourteen or above on all the nonverbal tests.

No rigid routine of tests should be given; it is important to have clinicians who are qualified to use their own judgment concerning the technics that will enable them to give a reasonably accurate approximation of intellectual levels. The tests should be varied to eliminate effects of coaching, which have been observed occasionally. A few questions tapping different mental functions are much more useful than many questions referring to only one type of ability.

Figures are available for four members of the group of psychologists, in a total of sixteen days' examination. During this period, 5010 men were passed through the induction station. Of these, 199 were referred by the neuropsychiatrists for psychometric examination. Of those referred, 79 received a mental age rating of less than twelve, 120 a rating of twelve or over. The number of psychometric examinations in any one day ranged from 4 to 41.

The critical level of twelve was set up as an initial working basis. The Army regulations originally set a mental age of eight as the critical one, and this is obviously low for a modern mechanized army, which places a premium on individual initiative and independent action, in comparatively small groups. The level of twelve may be too high for general use. There is apparently a need for clarification of the situation in the immediate future.

*The use of this symbol was based on practical factors; its limitations are fairly understood by those technically concerned.

BOSTON MEDICAL LIBRARY

REPORT OF THE PRESIDENT FOR THE YEARS 1933 TO 1940†

I WAS elected President of the Boston Medical Library on January 17, 1933. I consider it incumbent on me to review briefly the salient events of the last eight years. In 1933, the library was suffering acutely from the severe financial depression prevalent at that time. Income from invested funds had dropped from over $27,000 in 1930 to $16,000 in 1933 — since then, it has dropped to below $14,000. Income from dues decreased by more than $1000. The most stringent economies had to be instituted to meet the situation. The staff was reduced, and a 10 per-cent salary cut was cheerfully accepted by those remaining. Salaries have since been restored. Evening sessions were omitted for a time, but have since been resumed. The maintenance of the building was by force of circumstances allowed to fall to a meager and inadequate level. Moreover, we were faced in 1933 with a staggering deficit of over $30,000, which had gradually accumulated over many years, $18,000 of this deficit being owed to the incomes of various restricted book funds as a result of having spent the money for other purposes, largely for the purchase of periodicals that were considered essential to the library. Furthermore, a cash debt of $12,000 was owed for binding and periodical subscriptions. This unhappy situation weighed heavily on the minds of the officers of the library.

The most pressing cash debts incurred for binding and periodicals were paid off in cash taken from capital, in addition to a gift of $2000 from a generous friend of the library, given for the purpose.

The debt to unexpended restricted income of book funds remained an incubus from which there seemed no escape. In spite of a determination at least not to let this sum increase in the future, it

†Read at the annual meeting of the Boston Medical Library, January 28, 1941.

had increased from $18,000 to over $23,000 at the end of 1935. Something radical had to be done. This debt of $23,000 was attacked from several angles and has been gradually whittled down, so that it stands today at the moderate figure of about $5450.

This has been accomplished in several ways. In the first place, since 1935, current expenditures have been kept rigidly within the incomes of the various restricted funds. We have been aided greatly in accomplishing this by the generous help of many medical societies of Greater Boston in underwriting subscriptions to foreign periodicals. Secondly, competent legal opinion was obtained to the effect that bound periodicals might properly be considered books. The adoption of this definition by the Board of Trustees permitted the cancellation of a considerable amount of the debt to the restricted book funds that had been incurred in previous years for periodicals. Thirdly, administration expenses for handling investments and funds that had been solely borne by the unrestricted funds were charged pro rata to the restricted funds as well, and these charges were carried back for a number of years. Finally, cash received from unrestricted gifts was allocated and spent directly toward the extinguishment of this debt.

In the latter part of 1935, the library received an unrestricted bequest of $25,000 from the estate of Mrs. Amelia Jackson Sargent, a sister of Oliver Wendell Holmes. This was indeed a lifesaving gift. It permitted paying off in toto the remaining binding bills of previous years, as well as a note of $3000 to the State Street Trust Co. The remainder was expended for renovation of the main building and the erection of two tiers of steel stacks in the annex. These improvements were urgently needed and put the building in excellent working condition for the first time in many years.

In addition to this generous bequest, the library has received during the last eight years the following gifts and bequests in round numbers: in 1934, a gift from Dr. John W. Farlow of $2000, unrestricted; in 1936, a gift of $10,000 from the Wadsworth family (this was given to establish and maintain suitable offices for officers of the Library on the first floor, as a memorial to Dr. Oliver F. Wadsworth, and his son, Dr. Richard G. Wadsworth); in the same year, a bequest from the estate of Dr. Malcolm Storer of $2000, unrestricted; in 1936, a bequest from the estate of Dr. John W. Farlow of $10,000, unrestricted; in 1939, a gift of $1000 from the friends of Dr. George H. Bigelow as a memorial fund for the purchase of books on public health. In addition to these larger benefactions, a constant stream of gifts and bequests of books, manuscripts, portraits and medical memorabilia of all kinds from numerous friends has added much to the value of our collections.

In 1937, the by-laws of the corporation were amended: a board of trustees was created and the terms of office for all officers, except the librarian, were limited.

During the last three years, through the efforts of the director, Mr. James F. Ballard, the aid of several WPA projects has been secured for the library. By this means a vast amount of important work has been accomplished at minimal expense — work that otherwise could not have been done. The mass of periodicals and serials accumulated during twenty years, piled high in the basement, was examined and sorted. Items wanted by the library were catalogued and filed, the remainder disposed of by exchange or sale. Over 397,000 items were examined, 25,000 added to the files, over forty tons of material disposed of by exchange, and an even greater tonnage sold for waste paper. Forty-one thousand books were examined and disposed of, and 19,000 periodical and serial titles were checked for the new edition of the *Union List of Periodicals and Serials*. Three hundred and seventeen thousand dissertations and theses, as well as several thousand bound volumes, have been examined, catalogued and shelved.

The catalogue in Holmes Hall, which was in a sad state of dilapidation, was renovated, cleaned and partly retyped. Nearly sixty-three thousand volumes were vacuum cleaned and dusted. This work is still going on. In spite of the imposing amount of work done, much still remains, and I cannot say truthfully that our basement has as yet been transformed into a model of orderliness.

During the last two years, with the co-operation of the *New England Journal of Medicine*, over 90 per cent of the books received for review have, through the kindness of the reviewers, been turned back to the library. This has been a very great help, since it puts on the shelves a considerable number of the newest books that otherwise would have had to be purchased.

During the last year, the Committee on Postgraduate Instruction of the Massachusetts Medical Society has provided funds for the equipping of a bibliographical traveling library in connection with the courses offered. This joint enterprise, whereby the facilities of the library are extended to

outlying districts, is in line with a policy that the library has long desired to adopt but has been unable to undertake hitherto for lack of funds. It is an interesting experiment of much promise.

Cordial relations have been maintained between the Boston Medical Library and the libraries of the three large medical schools of Boston, and also with the libraries of the large hospitals. Coordination of policy with the library of the Harvard Medical School has obviated competition and the duplication of expensive items.

While the library has been struggling during the last eight years properly to maintain its services and its building, a steady and noteworthy accretion to its collections of incunabula and historical items has been going on, as the result of judicious expenditures from our funds restricted to these purposes, so that today the library in this respect has attained an outstanding position in the country.

The use of the library has shown a steady growth during the years, and the needs of students, scholars and the profession, in general, have been met quite satisfactorily, I believe, through the sustained efforts of the small but devoted staff.

Although, on the whole, considerable progress has been made during the last eight years in various directions, many serious problems remain. We are still terribly overcrowded and understaffed, and there is a crying need for the completion of the steel stacks. The financial support of the library is inadequate, depending as it does largely on its relatively small membership, which has remained practically stationary for years, in spite of vigorous efforts to the contrary.

The relation of this library to the libraries of the medical schools and hospitals of this community, and to the profession in general, is a difficult problem that awaits satisfactory solution. These smaller libraries provide for the ordinary needs of their clientele, so that many doctors do not feel the need of becoming members of the Boston Medical Library. What the ideal setup should be for this community needs serious study and wise decision. Preliminary steps in this study are already under way.

We are indeed fortunate in possessing a splendid library, inherited from our predecessors and built up by the unremitting effort and generosity of many wise and devoted friends of medical literature; such a precious heritage must not be allowed to decline, but must be fostered, cherished and sustained by the medical profession.

LINCOLN DAVIS, *President.*

REPORT OF THE LIBRARIAN FOR THE YEAR 1940*

IN 1876, John Shaw Billings, then librarian of the Army Medical Library, wrote, in commemorating a century of American medicine: "The medical library of most promise in Boston is that of the Medical Library Association, which, though only a year old, has about 3000 volumes, and will probably rapidly increase." He was right about the "library of most promise," for recognition was soon evident, and the medical collection of 11,000 volumes in the Boston Public Library was transferred to us. Other medical books followed, and the Boston Medical Library carried out the second injunction, mentioned by Billings, and did "rapidly increase." In 1940 we find ourselves with over 300,000 books and pamphlets; we are increasing yearly at a rate of 9000 to 12,000 items. In another twenty years we shall reach the half-million mark, a sizable library by any standard, and a collection needing all our stack space now available or projected. We are now, sixty-four years after Billings's remarks, still having "growing pains," apparently a perpetual and normal state for an active library. Our next major endeavor should be to complete the stacks in the annex provided for that purpose.

During the year, 1940, not only has the library grown in volume with the addition of about 3500 books and 9000 pamphlets, but the high quality of our accessions, a standard set by my distinguished predecessors, has been maintained. When I look over our list of rare books and manuscripts acquired during the year, I cannot help believing that we are fortunate beyond the dreams of many of our friends, both past and present.

When Bodley set up his staff at the library door at Oxford in 1597 he began the restoration of an ancient foundation, soon making the library into one of the most famous in the world. He left his own account of the matter:

> I found myself furnished with such four kinds of aids as, unless I had them all, I had no hope of success. For without some kind of knowledge, without some purse-ability to go through with the charge, without good store of friends to further the design, and without special good leisure to follow such a work, it could not but have proved a vain attempt.

*Read at the annual meeting of the Boston Medical Library, January 28, 1941.

Those same cherished "four kinds of aids" have made the Boston Medical Library what it is today, and without them your librarian could never have reported such important additions to our collection as I shall briefly mention.

Of manuscripts, we continue to add those of particular New England interest — health reports, letters, account books, bills for drugs and for services and all matters pertaining to the practice of medicine by our forefathers. The Boston Medical Library is the natural home for such items, and many have been received by gift. The librarian, however, has not hesitated to buy valuable material of this type, knowing well how time devastates the fugitive sheet that the future historian may consider of prime importance. Rich, too, have been our acquisitions of English imprints, fourteen printed before 1640 and four more before 1700. To our fifteenth-century books, now one of the greatest collections in the country, we can also report fourteen additions, all placed on our shelves since the publication last year of the *Second Census of Incunabula* by Miss Stillwell.* They are now entrusted to our care, precious relics of early printing and medical history. For them and their like, a treasure room is urgently needed, a place where the indispensable tools of scholarship, many of them unique, can be properly housed. To them must be added the early American imprints, reflecting the beginnings of medicine in our country. Not a few of these also found their way to our shelves in 1940. A number of important collections of books, moreover, have been acquired, particularly the Baumes Collection of French medical tracts, the Carsten Collection (850 volumes), illustrative of the physician in literature and of literary doctors, and the twenty-odd complete editions of the writings of Domenico Cotugno.

These acquisitions all resulted from the "four kinds of aids," just as valuable in our times as in Bodley's. The "some kind of knowledge," resides largely in the mind of the director, Mr. James F. Ballard, whose quick recognition of the value of a book or a collection, based on long experience and a natural flair for book acquisition, again leaves the library in his debt. Without him, the library would indeed be a poorer place. Our "purse-ability," not large and yet greater than all but a few medical libraries in this country, gives us strength and a certain latitude of action. In book buying, to be able to acquire promptly often means securing the best. Since we are ever watchful of the market, the library rarely misses what our small funds can pay for. War years offer many unusual opportunities, however, and we do not anticipate any difficulty in 1941 in using all our book fund for worth-while purchases. Bodley's third aid, a "good store of friends to further the design," has never been wanting. What better friend has the Boston Medical Library ever had than our retiring president? May his interest continue from afar, but not too distantly afar, and for many years. And finally, Bodley's "special good leisure to follow such a work." There, indeed, we are weakest. Few have leisure today. Work of this type, for most of us means "nights, holidays and Sundays." But what better use of time? A report, a committee meeting or even the lowly book review serves to add to our rewards, those intangible assets so difficult to assess, but so potent in the advance of civilization. The most civilized country is the one that has produced the most great men. Has any man ever been great without a love of books? What country has achieved distinction, moreover, without libraries? Is not Boston a better Boston because our forebears collected the medical literature of their day, added to it the writings of the past and saw to it that a medical library should endure and grow? Well did our fathers of the Medical Library Association of 1875 realize the value of Bodley's four aids, and by the use of knowledge, purse-ability, friends and leisure set up a broad foundation on which we are still building. The librarian today sees no reason to change the four aids; on them rests the future of our institution.

HENRY R. VIETS, *Librarian.*

**Incunabula in American Libraries: A second census of fifteenth-century books owned in the United States, Mexico and Canada.* Edited by Margaret Bingham Stillwell. New York: The Bibliographical Society of America, 1940.

MEDICAL PROGRESS

PRACTICAL ASPECTS OF SURGICAL SHOCK*

J. Englebert Dunphy, M.D.†

BOSTON

TODAY, with half the world at war, the subject of shock is of particular interest. However, even in times of peace, it is of primary concern to both physician and surgeon because not only is it a frequent determining factor in the outcome of many surgical and medical conditions, but, being a reversible phenomenon, it offers hope of cure if recognized early and treated properly. This review is intended to focus attention on those aspects of the subject that are of importance in everyday surgical practice.

Shock has been described as a clinical condition, the characteristics of which are pallor, a cold, moist skin, a rapid thready pulse, shallow respirations, an appearance of anxiety that soon becomes one of apathy, a subnormal temperature and a low blood pressure. It is this clinical state or syndrome that quite properly comes to mind when the term "shock" is used. The time has come, however, when shock must be suspected, diagnosed, if possible, and treated before the development of this syndrome. The familiar picture of shock must be regarded as evidence of uncompensated or late shock. This is by no means a new conception. It was emphasized by Cannon[1] nearly two decades ago. Keith,[2] discussing wound shock in World War I, speaks of "compensated" and "uncompensated shock." The unreliability of the pulse rate and blood pressure as indications of shock, both experimental and clinical, has been stressed many times.[3, 4, 5] Nevertheless, although not new, the conception of compensated shock requires a wider clinical application. It is fair to state that shock frequently plays an important and often unrecognized role in the morbidity and mortality rates of appendicitis, intestinal obstruction, perforated ulcer, peritonitis from any cause, burns, severe fractures and acute or subacute loss of blood.

It is generally accepted today that an essential feature of shock, regardless of cause, is a disparity between the amount of circulating blood and the size of the vascular system. This can be brought about either by a loss of fluid from the circulation or by an uncompensated increase in the size of the vascular bed. The size of the vascular system may be increased by such sudden loss of vasomotor tone as occurs in fainting and under spinal anesthesia, or it may be increased by widespread capillary dilatation and injury from bacterial toxins, certain anesthetics or histamine. Shock due to dilatation of vessels is referred to as "neurogenic shock."[6] When there is actual injury to capillaries and vessels the term "vasogenic shock" may be used. By and large both neurogenic and vasogenic shock are characterized by a low blood pressure, are more easily recognized and are less serious than shock secondary to an actual loss of fluid from the vascular system (so-called "hematogenic shock").[6] This loss may occur in many ways: as blood in hemorrhage; as plasma in burns, peritonitis, crushing injuries and intestinal obstruction; and as water in diarrhea, vomiting or sweating. Fluid may be lost from the blood stream into tissues as a consequence of generalized capillary injury. This may be a primary phenomenon, as described above, producing vasogenic shock, or it may be secondary to a prolonged reduction of the blood volume, reduced blood flow and anoxia.

Usually there are many factors in shock, some a primary cause of the reduced blood volume, others secondary to it. Prolonged peripheral vascular collapse due to nervous stimuli (neurogenic shock) may result in actual injury to capillaries (vasogenic shock). When there is widespread capillary injury not only is the vascular bed increased in size but fluid is lost from the circulation into the viscera, thus bringing about an actual reduction of the blood volume (hematogenic shock). Conversely, if the blood volume is reduced by loss of fluid from the circulation, as in hemorrhage, this leads to reduced volume flow, a reduced delivery of oxygen, tissue anoxia and widespread capillary injury. Thus, hematogenic shock leads to vasogenic shock. The situation has been well depicted by Moon[7] as a vicious circle. His ideas and those of Blalock are reproduced in a modified form in Figure 1, in which a reduction of the effective blood volume is shown as the essential factor and pathologic changes in the viscera as a final result of shock.

The pathologic changes that occur in the viscera are not of a specific character, but represent the end result of capillary injury and tissue anoxia.[8]

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There are dilated, congested capillaries, capillary hemorrhages, edema and in some cases degenerative changes in parenchymatous tissues throughout the lungs, liver, kidneys and gastrointestinal tract. It is likely that, once well established, these pathologic changes are irreversible. Treatment, if it is to be effective, must be instituted before generalized tissue damage occurs.

At this point the blood-pressure changes in shock require further comment. If the shock is primarily due to factors that produce vascular relaxation or generalized capillary injury, there will be a low blood pressure. This occurs in such conditions as spinal anesthesia, histamine shock and barbiturate poisoning. If the shock is a consequence of loss of fluid from the blood stream, as in hemorrhage, burns, peritonitis, intestinal obstruction or mechanical injury, there may be a low blood pressure at the onset as a consequence of pain and psychic influences. If the shock is very severe, there may be no reaction from this fall in pressure, but usually after pain and fear have been relieved the compensatory mechanisms of the circulation are such that the usual clinical manifestations of shock do not appear. For example, if an anesthetized animal is subjected to mechanical or thermal trauma there is an initial fall of blood pressure and elevation of the pulse rate, but within a few minutes both return to comparatively normal levels and may remain there for long periods.[8] However, from the moment of injury there is a rapid and progressive reduction of the blood volume. Indeed, in severe shock in which death occurs within eight to twelve hours, the principal reduction of the blood volume occurs within two or three hours of the injury. This is shown in Figure 2. It should be noted that after three hours the blood volume falls to two thirds of its original total. There is a marked rise in the hematocrit reading, indicating hemoconcentration, but very little alteration in the pulse rate and blood pressure. If one were to examine the animal at this point, noting only the levels of the pulse, respiration and blood pressure, a diagnosis of shock would be untenable. Yet, this animal is in a state of grave shock, as evidenced by the reduction of the blood volume. Under the conditions of experiments of this type a fall in the blood pressure indicates a failure of the compensatory mechanisms of the body and impending death. It was shown years ago that a similar response may occur in experimental hemorrhage.[9]

In man it has been shown that as much as 500 to 1000 cc. of blood may be removed from a volunteer subject without significant alteration of the pulse or blood pressure, or the appearance of pal-

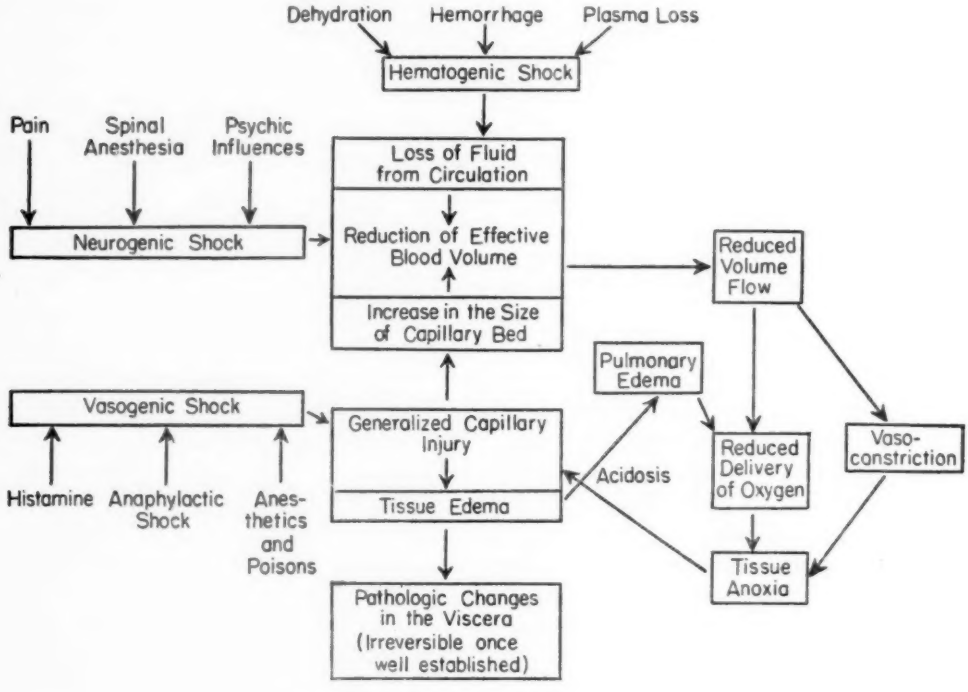

FIGURE 1. *The Vicious Circle of Shock.*

The classification of shock as given by Blalock is combined with the ideas of Moon to provide a more complete picture of the many variables that enter the shock syndrome.

lor, thirst or a sensation of anxiety.[10] In fact, there may be so little change in the physical appearance of the subject at rest that a physician unaware of the removal of the blood would pronounce him fit to give transfusion. Yet, the rapid removal of an additional 500 cc. of blood might prove fatal. So it is with many clinical conditions. A familiar example is the free perforation of duodenal ulcer. The patient who is seen within half an hour after the onset is often described as being in severe shock. He is prostrated with pain. There are marked pallor, a rapid pulse, a moist, cold skin, a subnormal temperature and a low blood pressure. After the pain is relieved and compensation is established, the color of the skin returns, the pulse improves and the blood pressure returns to normal levels. At this point one is apt to say that the patient has reacted from his shock, or if he first enters the hospital in this state, it may be said that he is not in shock. Yet this patient may be in severe shock. He may be in the same condition as the experimental animal referred to above, or the subject who has just given a 1000-cc. transfusion. He is in a state of compensated shock. The reduction of the blood volume is such that although the usual clinical signs of shock are not manifested, there is a heavy burden on the circulation that, when combined with the effects of anesthesia and a surgical operation, may prove fatal. So it is with many clinical conditions, such as appendicitis, peritonitis and intestinal obstruction. The factor of shock is present, and even though it is not severe enough to produce the classic clinical picture, it places a serious and unnecessary burden on the circulatory system that, added to other factors, may prove the deciding point in a fatal issue. It behooves the surgeon, therefore, to anticipate and correct such reductions of the blood volume before the signs of uncompensated shock appear.

The value of early treatment in shock is well known. The importance of instituting therapy in so-called "compensated shock" before the usual clinical manifestations of shock appear has not received adequate attention. Yet it is in this period that treatment is most likely to be effective. In an experimental study of shock due to severe burns it was shown that if treatment was delayed until the blood pressure had fallen, it was of no avail; and even if such treatment restored the blood volume to normal, there was no striking prolongation of the life of the animals and no alteration of the usual pathologic changes in the viscera.[11]

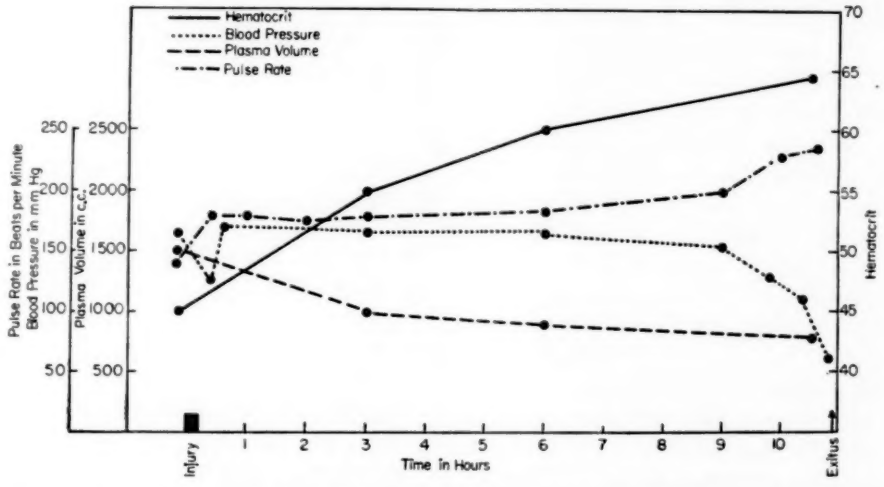

FIGURE 2. *The Course of the Changes in the Hematocrit, Blood Pressure, Plasma Volume and Pulse Rate in Experimental Shock Due to Severe Burns.*

A fall in the blood pressure is a late sign, indicating collapse of the compensatory mechanisms of the body.

How, then, may shock be recognized before the usual clinical signs appear? The significance of hemoconcentration as an early sign of shock has been emphasized by Moon.[7] As shown in Figure 2, the rise in the hematocrit in severe thermal trauma closely approximates the fall in the plasma volume. This sign is unquestionably of value and may appear long before there are significant alterations of the pulse or blood pressure. On the other hand, it is by no means pathognomonic, and since control observations taken before an injury are not possible in the clinical treatment of shock, the initial level of the hematocrit is often

of little value. A low hematocrit due to anemia may rise to a normal level as a consequence of hemoconcentration. Moreover, concealed hemorrhage is so often a complicating factor in shock that the hematocrit levels are very difficult to interpret. Finally, as Weiss[12] has emphasized, in the well-hydrated patient, plasma may be lost into an area of injury but hemoconcentration may be prevented by fluids entering the circulation from the tissue spaces elsewhere in the body. Thus, hemoconcentration may not be manifest even in traumatic shock uncomplicated by hemorrhage. However, it is true that a changing and particularly a rising hematocrit is of great significance in the early stages of shock.

Scudder and his associates[13, 14] point out that four determinations are essential in evaluating the early stages of shock — the hematocrit, the specific gravities of whole blood and plasma, and the level of the serum protein. By means of these data he believes that the onset of shock can be anticipated. The essential feature of these tests is the use of the falling-drop method to determine the specific gravity of plasma, from which the level of the plasma protein can be calculated. This provides a rapid and accurate check on the level of the serum protein. The protein level is a valuable check on the hematocrit and provides information of considerable importance. It furnishes evidence of protein loss as well as hemoconcentration and may give an index of hemoconcentration in the presence of anemia. However, not infrequently in the early stage of shock combined with hemorrhage, these figures may be within normal limits. For this reason, although such determinations are of inestimable value in the appraisal of early shock, it is a mistake to consider them as an accurate and infallible guide to the state of the circulation. The details of the history, the character of the illness, the quality as well as the rate of the pulse, the general state of hydration and the color of the skin and mucous membranes provide information of great value to the careful observer. Emphasis must be placed on an evaluation of the total picture rather than on the results of any laboratory data if one is to recognize the earliest manifestations of shock.

It is not sufficient to urge early therapy in shock. The quality and quantity of the therapy are of extraordinary importance. Treatment is largely confined to efforts to remove causative factors and to restore the blood volume to normal. Although there is experimental evidence to support the use of adrenocortical extract, various drugs and high concentrations of oxygen, these methods must be looked on as only of contributory value. The chief requisite is to restore, if possible, the lost fluid. Treatment therefore depends on the type of fluid required. Although there is considerable overlapping, three broad groups may be recognized: dehydration shock, in which the principal requirement is water and salt; shock produced by hemorrhage, in which blood is needed; and finally, shock due to loss of plasma, for which plasma is the best replacement. In recognizing the type of fluid replacement required, determination of the hematocrit and serum protein is of great value.

Dehydration shock is characterized by severe depletion of water and electrolytes. It is encountered in its most classic form in Asiatic cholera,[15] but in lesser degrees is common in clinical practice,[16] particularly in high intestinal obstruction, in some cases of peritonitis and in prostrating diarrhea or fever. The changes in the blood consist in an elevation of both the hematocrit and the serum protein and usually a fall in the serum electrolytes. The type of fluid required is physiologic saline or lactate solution, depending on the relative losses of chloride and sodium ions. Treatment of this form of shock is essentially that of dehydration, and the details of treatment have been well worked out by many investigators.[16–19] Emphasis should be placed on the dangers of giving an excess of saline solution in the treatment of dehydration shock.[18]

Shock due to hemorrhage is well understood. In its acute form it is characterized by a fall in the hematocrit and little or no change in the level of the serum protein. The treatment, of course, is to restore the lost blood by transfusion, but the frequency with which this may be necessary is not fully appreciated. The fact that there has been no gross hemorrhage during a prolonged surgical operation is no indication that there has not been a considerable loss of blood. The amounts of blood taken up in towels, swabs and sponges may be enormous, and it should be axiomatic that at least one transfusion is advisable following extensive surgery, even though there has been no gross hemorrhage. Although, as previously pointed out, patients may compensate well for considerable losses of blood, the sick surgical patient should not be required to face this additional and unnecessary hazard when the lost fluid can readily be replaced by transfusion. As Blalock[6] has said, "There is probably no one procedure which, in recent years, has had a greater influence in reducing the mortality connected with accidents and operations than the more frequent use of blood transfusions."

The third and most important form of shock is that in which loss of plasma is the principal factor in the early reduction of the blood volume. This occurs in burns, in severe crushing injuries and,

to a lesser extent, in peritonitis and intestinal obstruction.[20] It is characterized by an elevation of the hematocrit but with only slight or no increase in the level of the serum protein. A normal concentration of protein in the presence of hemoconcentration is indicative of loss of protein and is a clear indication for injection of serum or plasma. The common practice of using physiologic saline solutions in shock accompanied by loss of plasma must be deprecated. Unless there are specific indications for its administration, as described under dehydration shock, more harm than good may result. The possible dangers following the use of saline solution in shock were pointed out long ago by Beard and Blalock.[21] They showed that animals that had been given saline solution in shock often appeared worse after the infusions were stopped than if no treatment had been given.

There are three reasons why such a solution is harmful. First, although the injection produces a temporary rise in the blood volume with apparent improvement in the patient, not only is this of short duration but it is accompanied by such marked dilution of the blood that the serum protein is reduced to an edema level. Secondly, saline solution leaks out of the blood stream, not as such but as dilute plasma, thereby actually increasing the rate of protein loss. Finally, as a consequence of the loss of protein, the osmotic pressure of the blood is lowered and fluid leaks out of the blood stream, not only into the areas of injury but throughout the viscera, thereby accentuating the pathologic changes in the viscera.[11] Thus, the use of saline solution in shock of this type not only produces no permanent rise in the blood volume but eventually leads to pulmonary edema and congestion, with a concomitant decrease in the aeration of the blood, thereby adding an additional factor to the vicious circle of shock, as depicted in Figure 1.

The efficacy of serum or plasma injections in shock has been demonstrated by many investigators.[22–25] Emphasis has been placed on the fact that the level of serum protein is sustained, the osmotic pressure of the blood is not lowered, less fluid leaks out of the vascular system, and thus the beneficial effects are more permanent. It should be pointed out that in severe shock the beneficial effect of a single injection of serum or plasma may be no more permanent than that of saline solution.[11] Plasma is lost into the site of injury, particularly in severe burns, so rapidly that within a few hours the blood volume again falls to a shock level. In severe shock, therefore, enormous amounts of serum or plasma may be necessary. In experimental shock due to thermal trauma, it has been demonstrated that a continuous infusion of plasma at the rate of about 100 cc. per hour is necessary to maintain the blood volume at a normal level during the first ten hours.[11] Elman[26] recommends giving plasma in amounts up to 1500 cc. during the early stages of severe burns, and Mahoney[27] has had occasion to give as much as 3000 cc. to a patient undergoing a one-stage resection for cancer of the head of the pancreas. How long plasma continues to be lost from the circulation in severe shock is probably variable. Elkinton and his associates[25] suggest that it continues for as long as forty hours. In any individual case, emphasis should be placed on frequent determinations of the hematocrit and serum protein, and continuation of therapy so long as there are indications.

Finally, it should be stressed, that one frequently encounters dehydration and blood and plasma loss in the same patient. Under such circumstances careful evaluation of the clinical and laboratory evidence is necessary if the total picture is to be correctly appraised and proper treatment instituted.

Summary

Because of the compensatory reactions of the body the usual clinical signs are often absent in the early stages of shock due to dehydration, hemorrhage or loss of plasma. Successful treatment depends on the recognition of shock before the usual clinical signs appear. Varying degrees of shock of this type are frequently encountered in many common surgical conditions, notably peritonitis, intestinal obstruction, burns, trauma and hemorrhage. A correct appraisal of the condition and the institution of proper replacement therapy are dependent on a careful study of the patient as a whole, as well as an evaluation of certain essential laboratory data.

References

1. Cannon, W. B. *Traumatic Shock*. 201 pp. New York: D. Appleton and Co., 1923. P. 10.
2. Keith, N. M. Blood volume in wound shock. *Report of Shock Committee, English Medical Research Committee*. No. 26. 47 pp. London: His Majesty's Stationery Office, 1919. Pp. 36-44.
3. Cope, Z. A criticism of current views of shock and collapse. *Proc. Roy. Soc. Med.* **21**:599-610, 1928.
4. Roome, N. W., Keith, W. S. and Phemister, D. B. Experimental shock: the effect of bleeding after reduction of the blood pressure by various methods. *Surg., Gynec. & Obst.* **56**:161-168, 1933.
5. Aub, J. C. and Cunningham, T. D. Studies in experimental traumatic shock. II. The oxygen content of the blood. *Am. J. Physiol.* **54**:408-415, 1920.
6. Blalock, A. *Principles of Surgical Care, Shock and Other Problems*. 325 pp. St. Louis: C. V. Mosby Co., 1940. Pp. 136-144.
7. Moon, V. *Shock and Related Capillary Phenomena*. 442 pp. New York: Oxford University Press, 1938.
8. Dunphy, J. E., Gibson, J. G., 2nd, and Keeley, J. L. Observations on the pathology of shock. *Surg., Gynec. & Obst.* **72**:823-833, 1941.
9. Meek, W. J. and Eyster, J. A. E. Reactions to hemorrhage. *Am. J. Physiol.* **56**:1-15, 1921.
10. Stead, E. The response of normal subjects to acute blood loss and the mechanism of the restoration of blood volume. *Arch. Int. Med.* (in press).

11. Dunphy, J. E. and Gibson, J. G., 2nd. The effects of replacement therapy on the pathologic changes in experimental traumatic shock. *Surgery* (in press).

12. Weiss, S. Syncope, collapse and shock. *Proc. Inst. Med. Chicago* **13**:2-12, 1940.

13. Scudder, J. *Blood Studies as a Guide to Therapy*. 315 pp. Philadelphia: J. B. Lippincott Co., 1940.

14. Drew, C. R., Scudder, J. and Papps, J. Controlled fluid therapy: with hematocrit, specific gravity, and plasma protein determination. *Surg., Gynec. & Obst.* **70**:859-867, 1940.

15. O'Shaughnessey, W. B. Analysis of the blood in cholera. *London Med. Gaz.* **9**:486, 1832.

16. Atchley, D. W. and Loeb, R. F. Dehydration and medical shock. *M. Clin. North America* **17**:1379-1391, 1934.

17. Stewart, J. D. Fluid therapy in surgery: a critical review. *New Eng. J. Med.* **215**:53-59, 1936.

18. Coller, F. A. and Maddock, W. G. Water and electrolyte balance. *Surg., Gynec. & Obst.* **70**:340-354, 1940.

19. Elkinton, J. R., Gilmour, M. T. and Wolff, W. A. The control of water and electrolyte balance in surgical patients. *Ann. Surg.* **110**:1050-1066, 1939.

20. Gendel, S. and Fine, J. The effect of acute intestinal obstruction on the blood and plasma volumes. *Ann. Surg.* **110**:25-36, 1939.

21. Beard, J. W. and Blalock, A. Experimental shock. VIII. Composition of fluid that escapes from blood stream after mild trauma to extremity, after trauma to intestines and after burns. *Arch. Surg.* **22**:617-625, 1931.

22. Mahoney, E. B. Study of experimental and clinical shock with special reference to its treatment by intravenous injection of preserved plasma. *Ann. Surg.* **108**:178-193, 1938.

23. Bond, D. D. and Wright, D. G. Treatment of hemorrhage and traumatic shock by intravenous use of lyophile serum. *Ann. Surg.* **107**:500-510, 1938.

24. Strumia, M. M., Wagner, J. A. and Monaghan, J. F. The use of citrated plasma in the treatment of secondary shock. *J. A. M. A.* **114**:1337-1341, 1940.

25. Elkinton, J. R., Wolff, W. A. and Lee, W. E. Plasma transfusion in the treatment of the fluid shift in severe burns. *Ann. Surg.* **112**:150-157, 1940.

26. Elman, R. Therapeutic significance of plasma protein replacement in severe burns. *J. A. M. A.* **116**:213-216, 1941.

27. Mahoney, E. B.: personal communication.

CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICOPATHOLOGICAL EXERCISES

FOUNDED BY RICHARD C. CABOT

TRACY B. MALLORY, M.D., *Editor*

CASE 27211

PRESENTATION OF CASE

A fifty-seven-year-old married nulliparous woman entered the hospital complaining of abdominal pain, nausea and vomiting.

Six years before admission, the patient had an attack of pain in the right upper quadrant of the abdomen, which was accompanied by nausea and vomiting and lasted for five days. Since that time she had had attacks of biliousness, characterized by epigastric fullness, nausea, headache and dizziness, which occurred perhaps once a month, followed the ingestion of greasy foods, and were prevented by the elimination of these foods from her diet. Of recent months she had been slightly constipated, and one week before admission noticed the onset of general malaise and nausea. During the next three days the patient took several doses of saline cathartics with good results, but three days before admission she was seized with a crampy mid-epigastric and right upper-quadrant pain accompanied by abdominal distention and the vomiting of "yellow bile." Soon the pain became severer and more constant, and spread to involve the entire upper abdomen, but there was no constipation. Her physician administered a "strong hypodermic." The following day her condition was unchanged; pain and vomiting were still present, there were no bowel movements and her physician gave another hypodermic injection. The day before admission the pain shifted to the lower abdomen and was constant, colicky without radiation and located chiefly in the left lower-quadrant and suprapubic regions. When the patient attempted to rise from bed, she suffered severe pain in the rectum. Her physician recorded a temperature of 100°F. and found tenderness, especially in the left lower quadrant, with generalized rebound tenderness. During the day the patient had several bowel movements. On the morning of admission vomiting reappeared, the pain had eased slightly, but abdominal tenderness was more pronounced and she passed small amounts of gas by rectum. At no time had there been chills, jaundice or change in the color of her stools. During the illness there was some frequency with cloudy urine, but no reddening had been noticed.

The patient had had the usual childhood diseases, including scarlet fever and diphtheria. The family history was irrelevant.

On examination the patient was well developed and well nourished, sallow and drowsy. Her tongue was dry and coated, the breath having a questionably uremic odor. The heart and lungs were normal; the blood pressure was 100 systolic, 70 diastolic. The abdomen was somewhat distended, and there was no spasm; however, there was a slight generalized tenderness most marked in the left lower quadrant, where there was rebound tenderness. Peristalsis was hypoactive, with some high-pitched sounds, but no true tinkling. On pelvic examination, movement of the cervix produced considerable pain. Tenderness was present in both vaults, more marked on the left, and in each there was a small tender mass situated posteriorly, the one on the left being more prominent. Rectal examination revealed a large rectal shelf, with a well-defined, firm fixed mass posteriorly on the left. The feces were guaiac negative.

The temperature was 100°F., the pulse 95, and the respirations 25.

The urine was normal. The blood showed a red-cell count of 3,700,000 with a hemoglobin of 70 per cent, and a white-cell count of 12,600 with 89 per cent polymorphonuclears. The nonprotein nitrogen of the blood serum was 33 mg. and the protein 5.3 gm. per 100 cc., and the chlorides 97.5 milliequiv. and the carbon dioxide combining power 25.6 milliequiv. per liter.

A flat abdominal x-ray film showed gas-filled dilated loops of small bowel occupying the lower abdomen. The colon was practically empty.

An electrocardiogram showed a normal rhythm at 110 with a PR interval of 0.14 second. T_1, T_3 and T_4 were low or diphasic.

The patient was given intravenous fluids, and her condition remained unchanged until the second hospital day, when the abdomen was softer, and the peristaltic sounds infrequent and of normal pitch; a soft tender mass could be palpated in the left lower quadrant. The next day she was almost comatose, tracheal gurgles were present, and the temperature had risen to 104°F.; intravenous fluids were discontinued. A flat plate of the abdomen showed a decrease in dilatation of the loops of the small intestine.

Five days after admission the patient was much improved, the abdomen was soft and she passed three loose stools, but the white-cell count had risen to 25,600. From the time of entry, attempts to pass a Miller–Abbott tube beyond the stomach had failed, but on the fifth day it was visualized

within the jejunum and began to drain moderate amounts of thin brownish fluid. The next day tenderness had decreased in the left lower quadrant, but pelvic examination revealed an irregular fluctuant mass filling the pelvis to the brim and lying anteriorly and superficially on the left; there was only moderate tenderness. The loose stools continued, were composed of brown liquid containing mucus and gave a ++++ guaiac reaction. Examination of the chest revealed dullness, squeaks and groans, with increased vocal fremitus at the angle of the right scapula; the sputum contained a Type 20 pneumococcus. An x-ray film taken with a portable machine showed elevation of the right diaphragm, but no visible intrapulmonary disease except for a few areas of atelectasis on the right side. Chemotherapy was instituted, and in two days there was marked clinical improvement and the patient was able to take fluids by mouth, the temperature gradually dropping to normal and the white-cell count to 12,000. At the end of this period, however, she became apathetic, the temperature climbed to 103°F. and there were signs of consolidation in the right lower lobe, with rales at the left base. Another chest plate showed an area of density along the right border of the heart apparently in the medial portion of the middle lobe, which was believed to be due to partial atelectasis.

Two days later the patient was slightly disoriented and dyspneic, with a weak pulse. The abdomen was distended and somewhat spastic, with a little rebound tenderness. The firm mass in the left lower quadrant had increased in size, and peristalsis was hyperactive and tinkling; small amounts of feces continued to drain from the rectal tube. The cervix was fixed, and the firm mass, apparently continuous with the uterus, filled the pelvis. Both legs were edematous, the left more than the right. An abdominal film showed a small amount of air but no dilatation in the loops of the small intestine. Death occurred on the seventeenth hospital day, the temperature being 104°F., the pulse 130, and the white-cell count 18,000.

Differential Diagnosis

Dr. Arthur W. Allen: Dr. Lingley, will you please show us the x-ray films?

Dr. James R. Lingley: This is the first abdominal film, showing gas-filled loops of slightly dilated small bowel.

Dr. Allen: Can you see a gallstone anywhere?

Dr. Lingley: No; there are no opaque stones. This is a later film, taken with a portable machine, which still shows some gas in the small bowel. There is possibly a little less dilatation than previously. I do not see the mass spoken of in the pelvis on any of the films. This is the first chest film, showing a very high right diaphragm and some areas of density in the medial portion of the lung. This film, taken seven days later, shows an increase in the pulmonary process, and I believe that this density could be due to either atelectasis or pneumonia.

Dr. Allen: Dr. Lingley has not been as much help as I hoped he might be. The patient, a fifty-seven-year-old woman, came to the hospital a week after the onset of some sort of acute abdominal illness. We naturally think of this long story of gallstone colic in relation to the present illness, and wonder whether by any chance a gallstone could have eroded through into the duodenum or into the small bowel somewhere to produce this picture. There are a good many things against this possibility. The history is not quite long enough. It usually takes about three weeks of right upper-quadrant difficulty or signs of an inflammatory process before the stone erodes into the intestines. When it gets there, it may produce intermittent obstruction and finally pass by rectum. Usually, however, the obstruction is very definite, and in this case it was never complete. In spite of the dilated loops shown on entry, this does not look like the type of obstruction that one gets with gallstone ileus. Besides, the patient had had good evacuations with saline cathartics, and also some movements after she had stopped taking cathartics.

What else could we have that might be associated with her probable gallstones? In a case of this sort, I think we should mention the possibility of pancreatitis, which the long history of epigastric pain and vomiting strongly suggests. I should have expected that the patient, however, if she had had pancreatitis, would have had a boardlike abdomen on admission and would have been more ill, and also that she would not have run the course described in the record. For instance, it would have been unlikely for her to develop a large pelvic mass in association with pancreatitis. I am therefore inclined to believe that this episode was not in any way related to her gall-bladder disease.

The next question that we must try to decide is whether this is a mechanical or an inflammatory obstruction; whether or not it is based on a malignant background is not so important. Obviously, in the minds of the men looking after this patient, there was some doubt whether she did have a mechanical obstruction and not just a secondary ileus, so that they started to decompress the up-

per intestinal tract quite correctly with a Miller–Abbott tube. I think the facts that she continued to have evacuations and that she had so much inflammatory reaction as evidenced by the temperature and white-cell count, with the development of a mass in the lower abdomen, probably rule out mechanical obstruction such as we see associated with a band of adhesions. She had had no previous operations, which does not rule out mechanical obstruction but is one point against it. I believe we have to offer inflammation as the basis of obstruction. One condition that simultaneously produces the signs of intestinal obstruction and inflammation is an inflammatory process in Meckel's diverticulum, although I should have expected the course to be slightly different if this were an inflamed Meckel's diverticulum. However, the patient could have had the abdominal pain, the vomiting, the partial obstruction and the inflammatory pelvic mass from such a lesion. Fifty-seven is a little old for a Meckel's diverticulum to get a person into trouble.

There is another disease that I believe we must consider very seriously, although there are a great many odds against it, namely, diverticulitis of the sigmoid, and I have a feeling from the way the record reads that the patient was treated for this condition. She had epigastric pain at the onset, which is in order. Her pain and tenderness came down to the lower abdomen. Things were a little more concentrated on the left than on the right. The drawback to that diagnosis, as I see it, is this: if a diverticulitis of the sigmoid is sufficient to cause an abscess, complete large-bowel obstruction occurs. This woman never had it, and I do not believe we can overlook that one feature. When she developed the mass in the pelvis she behaved like a patient who gets a residual pelvic abscess following appendicitis that produces diarrhea and the output of a great deal of liquid fecal matter.

We have no reason to suspect that the difficulties arose from any of the pelvic organs. The pelvic findings toward the end would not have been so masked and obscure as they appear to have been in this story.

The possibility of neoplastic disease is brought in with the use of the term "rectal shelf," which is usually applied to secondary malignant growths, primary in some other portion of the abdomen, implanted in the pelvis. The final course and description of this mass make it improbable that it was a malignant rectal shelf, and we otherwise have very little to support a neoplastic background. The patient had had no loss of weight or loss of strength, and the stools early in the examination were negative for blood, so that I believe we can rule out cancer.

I believe we come down to the most frequent cause of an acute abdominal situation with inflammation and the development of pelvic abscess, and that is our old friend acute appendicitis. The severe epigastric pain was perfectly consistent with the onset of acute appendicitis. The sudden decrease in symptoms at the end of a few days was probably due to rupture of the appendix. At no time after the patient came into the hospital was she in any condition for exploration. I judge she was not operated on, and if the surgeons missed an opportunity to do her any good it was at the time that they might have drained a pelvic abscess. They described it so beautifully as a large mass filling the pelvis to the brim, fluctuant to the examining finger below. On this same day the x-ray film failed to show dilated loops of small bowel, which at times can give the impression of a pelvic abscess; therefore, it could not have been a dilated loop of small bowel that they were feeling by rectum.

The patient developed a Type 20 pneumonia. We have to take just a moment to consider the possibility that this woman had a so-called "idiopathic peritonitis" from the pneumococcus, resulting in this abscess. I mention this because it can occur in an adult. I have recently seen it in a man of thirty. The pneumonia was probably secondary and not primary, and I should be much surprised if we found in the end that she had an idiopathic peritonitis.

To come down to a final diagnosis, I shall put first, acute appendicitis with peritonitis and pelvic abscess, and second, diverticulitis of the sigmoid, with pelvic abscess. I think that we shall find that she did have gallstones, which were irrelevant and did not have anything to do with the story. Also she must have had pneumonia as a terminal disease.

Dr. Benjamin Castleman: Why did you rule out carcinoma of the sigmoid with pelvic abscess and perforation?

Dr. Allen: I did raise it as a possibility, and the thing that made me believe it probably was not a carcinoma was the lack of obstruction. This patient had mild ileus. I believe that if she had had a carcinoma of the sigmoid this woman would have had a large-bowel obstruction if it was big enough and bad enough to produce a perforation, and in addition she should have had blood in the stools. It is also on this basis of lack of obstruction that I thought it was not diverticulitis of the sigmoid.

Clinical Diagnoses

Pelvic abscess, secondary to carcinoma of sigmoid with perforation?
Diverticulitis of colon with abscess formation?
Ovarian cyst?
Intestinal obstruction.
Terminal pneumonitis.

Dr. Allen's Diagnoses

Acute appendicitis, with peritonitis and pelvic abscess.
Gallstones.
Pneumonia.

Anatomical Diagnoses

Acute appendicitis, with perforation.
Pelvic abscess.
Localized peritonitis.
Bronchopneumonia, slight.
Cholelithiasis.
Arteriosclerosis, aortic and coronary.

Pathological Discussion

Dr. Tracy B. Mallory: I am sorry we have none of the clinicians from the ward to discuss this case. The patient was admitted through the Emergency Ward, where she was seen by a surgeon. She was admitted on the medical service. The surgeons were called rather frequently in consultation throughout her hospital stay. At no time were they anxious to take her into their wards. The suspicions ran as Dr. Allen guessed — chiefly toward diverticulitis or cancer of the sigmoid, with secondary abscess formation.

At autopsy a large pelvic abscess was found, and floating free in its midst was the distal three quarters of the appendix. There was a wide open hole into the cecum, where its base had once been. There were also scattered pockets of pus between various intestinal coils, but no free fluid, no generalized peritonitis. It seemed probable from the autopsy findings that if she could ever have been got into condition to withstand any operation whatever, the abscess could have been drained through the rectum or vagina and she might have survived. The other findings at autopsy were not very striking. She had a considerable amount of arteriosclerosis, including some coronary sclerosis. The lungs were edematous and atelectatic and showed very little pneumonia, although there was a trace of it. She had three gallstones, each about 1 cm. in diameter.

Dr. Gordon A. Donaldson: She would have been drained if she had not developed a pulmonary infection. I believe the surgeons thought she had a twisted ovarian cyst at that time and were reluctant to drain it because of the fact that the intestinal obstruction was decreasing.

CASE 27212

Presentation of Case

A fifty-six-year-old Greco-American woman entered the hospital complaining of abdominal pain and vomiting. The history was obtained through an interpreter.

The patient was first seen in the Out Patient Department two and a half years before admission, at which time she complained of epigastric pain of four years' duration, which apparently occurred after meals. A Graham test showed a normally functioning gall bladder and no visible stones. One year later the patient again visited the Out Patient Department and stated that the attacks of epigastric pain were still present and appeared when her stomach was empty. It was worse in the morning, was not relieved by food, and was accompanied by gas and a feeling of "something jumping" in her stomach. The pain radiated through to the back and was almost severe enough to make her cry. Furthermore, the patient stated that she used laxatives frequently for constipation. On examination, there was tenderness in the left upper quadrant of the abdomen, and the liver was palpable one fingerbreadth below the costal margin; the examiner believed a hard mass was present below and posterior to the soft liver edge. The blood pressure was 160 systolic, 90 diastolic. A gastrointestinal series was negative, and examinations of the blood and urine were negative. The patient was seen a year later and six months before entry in regard to her tonsils, and again she complained of epigastric pain.

Two weeks before admission the patient began to suffer from sudden attacks of crampy abdominal pain accompanied by rumbling in the abdomen and the passage of gas by rectum. Vomiting of food just eaten appeared the next day. She remained in bed, and the symptoms increased so that the waves of pain occurred every few minutes and vomiting became almost constant. At the time of admission there had been no bowel movement for four days and not even the passage of gas for twenty-four hours.

At no time had blood been noticed in the vomitus or feces. The patient had lost 30 pounds in the past few years.

Eighteen years previously, a "large mass weighing 7½ pounds" had been removed from her abdomen. The family history was irrelevant.

On examination the patient was acutely ill and

suffering from spasms of severe abdominal pain, between which she seemed comfortable. The heart and lungs were normal; the blood pressure was 138 systolic, 70 diastolic. The abdomen was distended, and there were hyperperistalsis and ascites; borborygmus was associated with the pains. A surgical scar was present in the mid-line of the lower abdomen.

The temperature was 99°F., the pulse 98, and the respirations 25.

The urine was normal. The blood showed a red-cell count of 4,400,000 with a hemoglobin of 85 per cent, and white-cell count of 11,450. The blood Hinton reaction was negative.

A flat abdominal film showed several gas-filled loops of small intestine in the left upper quadrant. There was no evidence of cecal dilatation. A barium enema revealed no abnormality.

A laparotomy was performed on the day of admission. A small amount of free fluid was present in the abdomen, and innumerable implants of various sizes were seen on the small and large intestines and mesentery. The uterus did not appear to be enlarged, but it was surrounded by a mass of nodules. The entire small bowel was greatly dilated and thickened, as if by long-standing partial obstruction. The omentum lay in the upper abdomen and was adherent to the liver, which could not be palpated, but there were numerous nodules in the region. Owing to the extent of the disease, it was considered unwise to do a palliative bowel drainage. A biopsy specimen taken from the anterior peritoneum showed chronic inflammation.

Postoperatively the patient improved; there was no vomiting, and the bowel movements were satisfactory. The temperature varied between 99 and 103°F., and the white-cell count averaged 14,000. Gradually, however, abdominal discomfort returned, and a flat plate of the abdomen nine days postoperatively showed an unusually large amount of barium in the colon from the previous enema. Most of the barium lay in the right half of the colon, but it was also present in the descending colon, sigmoid and rectum. Markedly dilated loops of small intestine were seen in the mid-abdomen and upper abdomen. The following day another operation was performed.

Differential Diagnosis

Dr. Grantley W. Taylor: I think we had better start with the x-ray examination.

Dr. James R. Lingley: This is the first abdominal film taken, showing gas-filled loops of dilated small bowel, forming a stepladder pattern in the left side of the abdomen. This finding is constant in the succeeding examinations. There is possibly a little increase in density, suggesting a mass in the mid-lower abdomen. There also appears to be an area of narrowing in the upper sigmoid, which from the films might either originate in the bowel or represent involvement of the bowel from without.

Dr. Taylor: We are concerned with a patient with a long-standing history of difficulty, chiefly referable to her gastrointestinal tract and upper abdomen, who suddenly developed an acute episode in the course of six days. Shortly before admission to the hospital, she had begun to have some evidence of weight loss. The original complaints were suggestive enough of gall-bladder disease to warrant investigation. But the Graham test showed normal function. It seems to me that that justifies us, even some years after the x-ray studies, in ruling out the gall bladder as having been responsible for her symptoms. There is some relation of the upper abdominal pain to the stomach, perhaps, in that the pain was more prominent when the stomach was empty. The pain radiated through to the back; I do not believe we can make much capital out of that at the present time. The other fact about the history is the removal of a tumor eighteen years before — a large mass weighing 7½ pounds. That was at the age of thirty-eight. It would have been of interest to know whether she had had normal menstruation following that removal. I think that should have been included in the history. At the time of laparotomy, no reference was made as to whether or not the ovaries were observed, or if so, what they looked like.

The patient came in quite obviously suffering from an acute obstruction, which the flat films bear out. It is of interest that there was no gas in the cecum, and it is reasonable to say that the diagnosis was certainly acute obstruction of the small intestine, with no obvious involvement of the colon. At examination, the patient was acutely ill. She had been obstructed for two weeks, and had been completely obstructed for four days, suffering from spasms of severe pain, between which she seemed comfortable. The abdomen was distended. Ascites and borborygmus were present with the pain. I suppose by ascites they mean shifting dullness. I do not consider ascites to be observable on physical examination; the evidences of it may be. The blood picture is interesting. The patient had had a long illness and an acute recent episode; yet the blood was quite normal. It may be that she was so dehydrated as a result of the emesis that the hemo-

globin represented a false level. A barium enema was described as showing no abnormality. Dr. Lingley points out an area suggesting a stenosing lesion high in the sigmoid, which I think we must keep in mind.

Laparotomy was performed at once, presumably for an acute obstruction. No mention is made of the use of a Miller–Abbott tube. Apparently the patient was so badly off that they thought that they had to operate at once, and perhaps start the tube at the same time. The laparotomy findings are very interesting. Free fluid was present, and innumerable implants of various sizes were seen. The small and large intestines and mesentery were all covered with them. One can recognize neoplastic implants in the abdomen, and sometimes numerous implants of various sizes are seen. The description does not convey very much to me. I should certainly have a clearer picture if I had seen them myself. If one had a case of tuberculous peritonitis, one could say that tubercles were implants and undoubtedly they would vary in size. One could describe the dissemination of echinococcal disease inside the abdomen as implants, and they would vary in size.

DR. TRACY B. MALLORY: Can you describe them a little more, Dr. Wallace?

DR. RICHARD H. WALLACE: They were grossly what you could call typical carcinomatous implants.

DR. TAYLOR: I presume so, and yet Dr. Wallace, who was concerned with the operation, presumably removed one of these from the anterior wall and it was proved not to be carcinomatous, so that he was certainly wrong in his interpretation of that one and he may have been wrong in his interpretation of all the rest of them.

I was about to say that in younger women you can see implants due to endometriosis — not so numerous as in this case, however. As I have previously mentioned, nothing is said about the ovaries. The uterus is described as not enlarged but surrounded by a mass of nodules. Were the ovaries there, or were they not seen because of the massive nodules? A tremendously dilated small bowel was found, but nothing is said about whether the colon also participated in this process or whether there was any collapse of the small bowel, any sharp transition.

If most of us were confronted with this situation, I believe we should have done exactly what Dr. Wallace did, that is, take a biopsy specimen and close up the abdomen, with the idea that we were concerned with widely scattered neoplastic implants and probably with obstruction at no one point but at several places. Then we should have been as surprised as he was probably to have a pathologist's report of chronic inflammation of the tissue removed at operation.

The interesting point postoperatively is that the patient began to have a swinging temperature and more elevation of the white-cell count than before. She developed abdominal distention again and had obstruction, and then they found out that most of the barium was present in the colon from the enema that had been given some six days previously. I dare say at that time they may have scrutinized with more care that region in the sigmoid and decided that there might be carcinoma overlooked at the original operation. At any rate, another operation was performed, I presume with the thought of trying to relieve the obstruction, which then seemed to be more localized.

I have mentioned the non-neoplastic conditions that occur and that account for widely disseminated implantation of disease in the abdomen, namely, echinococcal disease, tuberculosis and possibly endometriosis. I do not believe we have to consider them. We have Dr. Wallace's assurance, and we have a pathological report that tends to rule them out just as completely or more completely than it rules out carcinoma. If we are dealing with carcinomatous implants throughout the abdomen, we must try to find a primary focus for the disease. We get very little help from the record in regard to where that primary focus probably was. We go back to the tumor removed eighteen years before to raise the question of whether the patient had ovarian neoplasm. Removing one ovary and leaving the other behind is very likely to be followed eventually, perhaps not after so long an interval as this, with malignant degeneration in the latter and the dissemination of implants. That is a very attractive diagnosis, because I suppose widespread intra-abdominal carcinomatous implants are more often due to ovarian carcinoma than to any other type as we see these cases surgically. However, many other areas may give rise to that type of dissemination. If we rule out the ovary, we think at once of the gastrointestinal tract — stomach, colon or rectum — as likely to give rise to widespread implantation. A negative gastrointestinal series was reported a year and a half before, but I think a carcinoma of the stomach could develop and become widely dispersed within that period. A suggestive area in the sigmoid colon and the presence of intestinal obstruction when she came in justify the assumption of involvement of the sigmoid. A carcinoma of the pancreas or biliary tract might develop in the ab-

domen rather silently and might progress to this extent, without interfering with the patient's well-being until there was widespread metastasis, but one would expect to have jaundice or some other evidence of a neoplastic process before this time. That is, I should expect either or both to have had liver metastasis before this widespread peritoneal implantation took place.

I neglected to mention the cecum specifically, but we know that a great many cecal carcinomas metastasize. I shall not consider it, however, because most of the obstruction was confined to the small intestines, and no mention is made of any mass in the cecal area. The only evidence in favor of carcinoma lower in the large intestine is the stricture or stenosis in the sigmoid colon.

I believe that, in spite of the negative biopsy of one of these nodules, the process is disseminated carcinoma. I believe that the patient had a carcinoma of the ovary, with disseminated implantation rather than primary involvement of the gastrointestinal tract. The obstruction was due to extrinsic infiltration of the bowel by this carcinoma.

Dr. Wallace: I operated on this patient with a diagnosis of acute small-bowel obstruction and found what I considered at the time very widespread metastatic disease. I was unable to palpate the liver or the region of the stomach because the omentum was adherent and had walled off the whole upper abdomen; its underside was a solid mass of nodules. Another mass of implants in the region of the terminal ileum was apparently chiefly responsible for the obstruction. There was also narrowing of the sigmoid in the site that Dr. Lingley has pointed out. The whole transverse colon was involved in the same process. There was no normal bowel with which to do a reasonable short-circuit operation, since there were implants down to the upper rectum. The peritoneum of the pelvis and around the uterus was one solid mass of nodules, and no ovary or ovarian tissue could be identified. I did not see the second operation. The patient continued to have symptoms of obstruction, and after ten days there was no great change. It was finally decided that it might be worth while to try to short-circuit the ileum to the upper rectum; this procedure was carried out apparently with great difficulty. The patient was not relieved, gradually went downhill, and died. Another interesting thing is that at the second exploration another biopsy was reported as showing chronic inflammation, although I do not believe there was any question in the minds of those who saw the inside of the abdomen that this was metastatic disease.

Clinical Diagnoses

Carcinomatosis.
Small-bowel obstruction.

Dr. Taylor's Diagnoses

Carcinoma of ovary.
Peritoneal carcinomatosis.
Small-bowel obstruction.

Anatomical Diagnoses

Scirrhous carcinoma of stomach, signet-ring type, with multiple peritoneal implantations.
Intestinal obstruction.

Pathological Discussion

Dr. Mallory: I might say that we have never been able to find anything that we could identify as carcinoma in either of the two biopsy specimens. At the time of autopsy, it was just as obvious to us as it had been to the surgeons that the patient was suffering from generalized carcinomatosis. We did have some advantage over the surgeons, and we were able to demonstrate that both ovaries were present. What the 7-pound mass was, I do not know. We found no trace of it. It may well have been a pedunculated fibroid. The primary site of the tumor was in the stomach. The lesser curvature was shortened to 10 cm. and was diffusely infiltrated with scirrhous carcinoma. There were many spots of obstruction throughout the intestinal tract, all due to serosal implantations. The maximum point of obstruction was probably in the region of the ileocecal valve, but the points of obstruction were so numerous that any satisfactory surgical relief would have been out of the question.

Dr. Taylor: I recently read a paper describing the minute details of abdominal implantation of carcinomatous cells in the serous surfaces. Apparently, the implant imbeds and sets up inflammatory reaction of severe degree, accompanied by the formation of new blood vessels and new lymphatics. Thus the early nodule consists almost entirely of inflammatory tissue, and the actual cancerous focus may be overlooked by paying too much attention to the infiltration.

Dr. Mallory: I think that is quite possible. This cancer was of the signet-ring type. These cells spread individually and widely. An occasional signet cell does not look very different from a monocyte, and single cells may be quite difficult or impossible to recognize.

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MASSACHUSETTS COMMITTEE ON PUBLIC SAFETY

The co-operation of Massachusetts physicians is essential if the work of the Massachusetts Committee on Public Safety is to be successful. It is hoped and urged that physicians in every community will help the committee in the difficult task of organizing civilian and medical preparedness, in accordance with the program briefly outlined in a letter appearing in this issue of the *Journal*.

NEUROPSYCHIATRIC DISORDERS AND THE SELECTIVE-SERVICE-BOARD PHYSICIAN

The casualties of World War I were not accounted for only in the number of men killed and physically injured. Under the strain of military service and warfare, thousands of men broke down nervously so as to be useless in the fighting forces, and a large percentage of these, as chronic mental or nervous invalids, have been cared for ever since at governmental expense.

If the occurrence of such casualties were in no way predictable, if the man who is destined to become shell-shocked were as much subject to the laws of chance as the man who is killed or physically injured in a certain engagement, the whole matter of nervous invalidism under conditions of war would have to be considered one of the inevitable contingencies and unpreventable circumstances of the abnormal situation.

Statistical data relevant to neuropsychiatric disorders that developed in the United States Army during the last war indicate, however, that in an arrestingly large percentage of such disorders there had been a history of nervous or mental instability or neurologic defect long before the men entered military service. As reported in an article in this issue of the *Journal*, 85 per cent of 50,000 patients with neuropsychiatric disorders that apparently developed during the term of service had had symptoms relating to the disorders for at least five years before the beginning of military service. Furthermore, of a total of 69,394 neuropsychiatric patients found in examination of 3,500,000 soldiers, 96 per cent had disabilities that did not arise in line of duty.

Such evidence is conclusive proof that so-called "shell shock" does not come out of the sky, hitting this man or that man unpredictably, as shell fragments or bullets do. The significance of the experience gained from the last war is, of course, that adequate neuropsychiatric examination of the men about to be inducted into service will probably in large measure eliminate those who may become a liability in the country's defense and who may become a drain on governmental funds for years to follow. The importance and commonsense necessity for alertness and awareness, on the part of the examining physicians, concerning signs of nervous instability, mental deficiency and neurologic disease in the men who are being examined cannot be too strongly emphasized.

Because of the haste created by the present national emergency, men are being inducted into the United States Army following a relatively superficial examination. As a rule, they do not see a specialist in neuropsychiatry until they arrive at the induction station, just prior to going to camp. The induction examinations are necessarily hurried, and their adequacy depends chiefly on the acuteness, clinical acumen and extent of readily usable knowledge of the individual neuropsychiatrist.

It is these circumstances that make the position of the examining physician for the local selective-service board so relatively important. If he has in mind not only the finding of physical disease but also personality reactions and evidence of neurotic or psychotic tendencies and of subaverage intelligence, he himself may see reason to reject the unsuited man. If he is not able to decide on the fitness of the candidate, he has recourse to the medical advisory board, which has the time and facilities necessary for thorough examination.

Expert skill is not required to make the local-board physician watchful for indications of handicapping neurotic traits or of low mental caliber. A few simple questions about emotional reactions and school and work records will at least suggest whether further investigation is advisable. It is a mistake for the physician to shy away from considering personality disorders because of the misconception that this field belongs only to specialists. Most doctors have had sufficient experience with human nature to entitle them to the privilege of questioning the intelligence or the stability of the people with whom they come in contact. No harm — quite the contrary — is done by questioning, especially when it occurs before the final rush of induction-board activities.

The matter of mental deficiency should be carefully considered. The often-expressed idea that physically husky morons make the best soldiers is a fallacy. As a matter of fact, 12 out of every 1000 men examined in draft and camp groups in the last war proved to be unfit as soldiers because of mental deficiency. The warfare of today is said to depend more than previously on individual initiative and intelligent co-operation; if this is true, the mentally deficient constitute even more of a liability. It is to the credit of the Boston Area Induction Board that a psychometrist is included in its medical personnel; he is able to judge the intelligence levels in doubtful cases.

Unfortunately, there seem to be no effective measurements for the quick determination of a man's capacity to fulfill the vocational duties of a soldier, even though the man is emotionally sound and of average intelligence. However, the evidence is that a workable ideal will be more nearly attained if men who are known to have personality defects are eliminated rather than put to the test of being made soldiers.

THE BOSTON MEDICAL LIBRARY: A HISTORY OF PROGRESS

In this issue of the *Journal* are two reports on the Boston Medical Library. The first is the report presented by the retiring president, Dr. Lincoln Davis, for 1933 through 1940; the second is that of the librarian, Dr. Henry R. Viets, for 1940, showing the present state of the library. The former is of special interest to readers of the *Journal*, many of whom are members of the library, since it covers a period of eight years during which the library passed through a state of financial crisis, now at least partially adjusted through the devotion of its officers and by donations from generous friends. In 1933, with a steadily falling income from invested funds and with a reduction in the number of members using the library, in addition to the piling up of debts accumulated over a long period of time, it is little wonder that the new president advocated the most stringent economies to meet the situation. Many adjustments were made immediately, and others as the subsequent years passed. Slowly, order has been restored, so that in 1941 Dr. Davis leaves his office to a successor, Dr. David Cheever, with the library in a greatly improved state.

The librarian's report indicates the steady growth of the library and its increased usefulness to the community. Much material of enduring worth was added to the library during 1940. The money

for the purchase of rare books comes from restricted funds, which cannot be used for any other purpose, and does not, therefore, interfere with the ordinary addition of current material so useful to the general reader. Current books have been added, as well as a large number of periodicals, so that the average person may find at hand all that is ordinarily needed for the preparation of a scientific paper or an address. This is probably the most important service that the library can render to the medical public, and the physicians of Boston and its vicinity are indeed fortunate in having a library at hand, so rich in material of value to them. Of equal importance are the bound collections of periodicals, reflecting the medical advances throughout the year. In these collections the Boston Medical Library is particularly rich, and they are extensively used, since no one makes an advance in medicine without standing on the shoulders of his predecessor. Rare, indeed, is it today to find a textbook without a preliminary historical introduction and an adequate bibliography, covering not only recent contributions but those of the past. This has been so fundamentally adopted in all textbooks and monographs, particularly in the latter, that one looks askance at a book without an adequate historical prospective and a complete bibliography. It is only libraries as large as the Boston Medical Library that allow for this normal method of propagating medical thought, and it is therefore the duty of a library to preserve the records of the past, as well as to acquire the writings of the present. Fortunately, the Boston Medical Library is as nearly complete in its periodical files, with one or two exceptions, as any library in the country.

In reading these reports, one feels proud indeed of the achievement of Boston medicine, for a library is a symbol of the intellectual worth of a community. Advances made in medicine demand a sound and wide knowledge of the literature on the subject. This has been widely recognized in the past, but it is often forgotten in the modern age of hurry and destruction. The Boston Medical Library has always upheld the finest tradition of New England medicine. It must be maintained and supported as one of our cherished institutions. "In times of war," said Pasteur, "I retire to the laboratory." Laboratory and library are closely akin; they both complement each other. Without both, medicine cannot hope to advance in an orderly scientific manner.

MEDICAL EPONYM

Hippocrates

The complete works of Hippocrates (460–370 B.C.) have never been translated into English. Two collections of selected treatises are available: a group of four volumes in the *Loeb Classical Library* (New York: G. P. Putnam's Sons, 1923–1931), with parallel Greek text and English translations by W. H. S. Jones and E. T. Withington, and Dr. Francis Adams's *The Genuine Works of Hippocrates*, in two volumes, originally printed for the Sydenham Society, London, 1849, and now available in this country in the form of a reprint published by William Wood and Company, New York. C. G. Kühn's *Magni Hippocratis Opera Omnia* (Lipsiae: Car. Cnoblochii, 1825–1827), in three volumes, is a standard edition of the Greek text with a Latin translation. Émile Littré's *Oeuvres complètes d'Hippocrate* (Paris: J.-B. Baillière, 1839–1861), in ten volumes, with a comprehensive index, is the best modern edition. Robert Fuchs's *Hippokrates, sämmtliche Werke* (Munich: H. Lüneburg, 1895–1900), in three volumes, is a convenient German translation, but does not contain the Greek text.

Hippocratic Facies. The classic description of the facies in sepsis occurs in the *Prognostics* (Adams, English edition, **1:** 236, and American edition, **1:** 195; Loeb, **2:** 8; Littré, **2:** 114; Kühn, **1:** 89; Fuchs, **1:** 452):

> The nose of the patient appears pointed, he is holloweyed, and his temples are sunken; his ears are cold and shrunken and their lobes stand out; the skin of the brow is drawn and tense and dry, the complexion wan or livid.

Hippocratic Nails. These are described in the *Prognostics*, the *Coan Prognostics*, the *Parts of Man* and elsewhere. The following quotation is from the *Prognostics* (Adams, English edition, **1:** 248, and American edition, **1:** 206; Loeb, **2:** 34; Littré, **2:** 152; Kühn, **1:** 106; Fuchs, **1:** 462):

> In order to recognize empyema in all cases, it is necessary to note the following: the fever does not abate; during the day it is slight, at night marked; there is profuse perspiration, an irritative cough with-

out the production of any notable sputum; the eyes become sunken, the cheeks flushed, and the fingernails become curved and the fingers warm especially at the tips; in some cases the feet swell, there is no desire for food, and vesicles appear over the body.

Hippocratic Succussion. The pathognomonic significance of this sign in hydropneumothorax was unknown to the Father of Medicine and his school. The maneuver is described in several of the Hippocratic treatises. The quotation is from Book Two of the *Diseases* (Littré, **7:** 70; Kühn, **2:** 258; Fuchs, **2:** 438):

> When fifteen days have elapsed from the onset, bathe the patient in hot water, place him on a firm seat, and let an assistant hold his hands while you, yourself, shake him by the shoulders so that you may hear on which side the sound of the disease may be perceived.

R. W. B.

MASSACHUSETTS MEDICAL SOCIETY

SECTION OF OBSTETRICS AND GYNECOLOGY*

Raymond S. Titus, M.D., *Secretary*
330 Dartmouth Street
Boston

Acute Appendicitis in Pregnancy, With a Fatal Outcome

A twenty-three-year-old para II was first seen when about ten weeks pregnant. Examination at that time showed a perfectly normal patient. The heart was not enlarged; there were no murmurs. The lungs were clear and resonant; there were no rales. The blood pressure was 120 systolic, 60 diastolic. The breasts and abdomen were normal. The uterus was in good anterior position.

Shortly after her first visit, the patient was again seen because of pain in the abdomen associated with nausea and vomiting. These symptoms were believed to be due to the pregnancy, and a diagnosis of an acute infection in the abdomen was not made until four days after onset. At that time she was sent to the hospital, where an operation was performed. There was no record of the temperature or white-cell count. The patient died four days after the operation.

Autopsy revealed acute peritonitis, a gangrenous placenta in utero, bilateral acute salpingitis and an acute gangrenous appendix.

Comment. This case illustrates that surgical complications occurring in pregnancy must be diagnosed early and treated early. Pregnancy is no contraindication to operation. It is fair to assume that early operation would have prevented this fatality. Undoubtedly the salpingitis and the gangrenous placenta were secondary to the general peritonitis. Formerly, it was believed that the pregnant woman was immune to infections and certain other conditions that the nonpregnant patient might have. Of course this is untrue, and the maternal-mortality statistics for Massachusetts for the years 1937, 1938 and 1939 show that there were 10, 13 and 5 deaths, respectively, due to acute surgical complications. Too often the knowledge that pregnancy exists obscures an underlying surgical condition. In the presence of an even slightly increased white-cell count, a temperature only moderately elevated and indefinite signs in the abdomen, — signs that do not make a specific diagnosis simple, — it is far better to explore than to delay too long. Acute appendicitis in pregnancy demands immediate surgery. Procrastination, as illustrated in this particular case, is apt to lead to a fatal result.

*A series of selected case histories by members of the section will be published weekly. Comments and questions by subscribers are solicited and will be discussed by members of the section.

DEATHS

COPELAND — Stanley E. Copeland, M.D., of Worcester, died May 13. He was in his fortieth year.

Born in Worcester, Dr. Copeland graduated from Dartmouth College in 1925 and from Harvard Medical School in 1928. He was a member of the staffs of the Worcester City Hospital and Worcester Hahnemann Hospital. He was a member of the Massachusetts Medical Society and the American Medical Association.

His widow, a daughter, two brothers and a sister survive him.

MATZEK — Neil C. Matzek, M.D., of Belmont, died May 13. He was in his forty-sixth year.

Born in Milwaukee, Dr. Matzek received his degree from Tufts College Medical School in 1921. Formerly associated with the staffs of the Waltham and Symmes Arlington hospitals, he was a member of the staff of the Cambridge hospital, the Massachusetts Medical Society and the American Medical Association.

His mother, his widow, two children, two brothers and a sister survive him.

MISCELLANY

NOTES

At a recent meeting of the American Association of Physicians, held at Atlantic City, Dr. James Howard Means, Jackson Professor of Medicine, Harvard Medical School, was elected president for the ensuing year.

Erratum. In the May 8 issue of the *Journal* it was announced that Dr. Walter B. Cannon had been awarded the Friedenwald Medal of the National Gastroenterological Association; the society sponsoring the award was the American Gastro-Enterological Association.

CORRESPONDENCE

MASSACHUSETTS COMMITTEE ON PUBLIC SAFETY

To the Editor: The urgency of the present international situation has greatly accelerated the work of the Massachusetts Committee on Public Safety. Early in April, the medical division of the Massachusetts Committee on Public Safety sent out to the three hundred and fifty-three communities of Massachusetts directions concerning what each community should try to do in the way of medical preparedness. Compressed for the purpose of this letter, it broke down the medical division's efforts into three parts.

The first was the establishment of first-aid posts, either stationary or mobile units, in sufficient number according to the size of the locality. These posts should have physicians, nurses, nurse attendants and orderlies for full twenty-four-hour duty. These posts should be equipped with bandages, splints and the necessary materials for the immediate care of injured and gassed civilians.

Secondly, a transportation system to take the injured person from the first-aid post to the hospital should be planned. This transportation may be by ambulance or by any available vehicle that is adaptable to the needs of the locality.

Finally, the hospitals serving each community — and in those communities with no hospital the nearest hospital must suffice — should be prepared to handle any type of injury imposed by enemy action. Supplies in addition to those ordinarily on hand in time of peace must be put by. The staffs of the hospitals should be organized for a twenty-four-hour period of duty, perhaps best broken down into day and night shifts. This involves not only the physicians, but the nurses, nurse attendants, orderlies, dietitians and all others serving the hospital. Dentists must be included in the personnel, both in the hospitals and in the first-aid posts. Where there is an insufficient number of trained nurses, attendant nurses should be trained in attendant nurses' schools or through the excellent system of the Red Cross.

Already, replies on questionnaires attached to the original letters are coming in, and the number of towns that have no doctors and of course no hospital is surprising. Such towns are grouping together with adjoining communities and are doing the best they can to organize in accordance with the principles suggested for adequate civilian preparedness.

We take no outspoken stand on the imminence of disaster, although it is fair to state that the predicament in which both France and Great Britain found themselves and the subsequent fate of most of the democracies that are now Nazi-dominated were in large part the result of failure to be prepared.

We ask that the physicians of every Massachusetts community go to their local defense committee, for one has been appointed in every community, and, if that defense committee has a medical program, urge the committee to correspond with the Massachusetts Committee on Public Safety and to take steps in line with the suggested preparations. Through the dissemination of this information, the citizens of Massachusetts may fully realize their responsibilities. It is only when everyone shares in these labors that we may be actively and properly prepared.

ELLIOTT C. CUTLER, *Chairman*
Medical Executive Committee

A NEUROPSYCHIATRIC EXAMINATION IN FIVE MINUTES

To the Editor: Yielding reluctantly to the pressure of Dr. Solomon Aronoff of the local induction board to put through 40 candidates without too great an infringement of their rights and civil liberties, I found myself improvising the following routine, which may be of some interest to your readers.

The applicant remains standing on entering the examining room. A general observation is made, including an examination for ataxia, atrophy and fibrillary twitchings, and the Romberg test. He then extends his hands for notation of tremors, and tests for adiadochokinesis — rapid alternation of pronation and supination of forearms — to determine the integrity of the cerebellar pathways.

The candidate kneels on a chair for Achilles-tendon reflexes, which are usually more reliable than knee jerks for ascertaining the integrity of the posterior columns and pyramidal tracts.

He sits and extends his legs for knee jerks (lumbar cord), while the examiner asks, "How far did you go in school?" (Stating the question at this time affords sufficient relaxation to check the knee jerks, which are especially valuable when the ankle jerks have not been satisfactory.) A maximum of sixth grade (normally completed at eleven or twelve years) or less, without adequate excuse (illness, work and so forth) suggests intellectual retardation.

The tendon reflexes of the forearm (biceps, triceps and radials) to verify integrity of the thoracic and the lower cervical segments, as well as checking on the pyramidal tract and the peripheral nerves, are checked as the next question — "What have you been doing since you left school?" — is propounded.

The pupillary reflexes (optic and oculomotor nerves) are then observed. Tests for ocular co-ordination, ocular muscular paralysis or weakness (oculomotor, trochlear and abducens nerves), nystagmus and other anomalies are made without questions, since any interference usually prolongs the time required for their performance.

The facial, the motor division of the trigeminal and the hypoglossal cranial nerves are tested rapidly, the examiner himself making the appropriate movements in demonstration. Thus: "Let me see your teeth, whistle, wrinkle up your brow [the seventh nerve]; open your mouth wide [the motor division of the fifth nerve]; stick out your tongue [the twelfth nerve].

Vision and hearing are examined by the eye, ear, nose and throat specialist; any sensory and gross neurologic complaints are easily elicited through the following questions.

How do you feel?
Do you eat well?
How do you sleep? (Sleep and digestion are impaired first in neurotic persons.)
How are your stomach and your bowels?
Are you taking any medicine?
Do you have any aches or pains?
Does *anything* bother you?
How do you get along with girls? (If married, . . . with your wife?)
How many jobs have you had?
What is the longest time that you have spent on any one job? (A large number of jobs in a very

short time may suggest simple schizophrenia or a psychopathic inadequacy.)

How do you feel about this induction?

How do you feel about the Army?

Do you think that Germany should win? (This is asked if answers to the previous two questions are unenthusiastic, suspiciously noncommittal or unfavorable.)

Additional questions and time, when indicated, are in order, and are encouraged by the chief medical officer — especially when intellectual retardation is suspected from a history of limited schooling or from stupid responses to instructions during the examination. Thus, during an additional five minutes or so spent with the two or three dull inductees who are likely to be discovered in a group of fifty candidates, the following psychometric tests can be made:

Repeat six digits forward (twelve-year test, Stanford).

Repeat five digits reversed (twelve-year test, Terman–Merrill).

Give an acceptable definition — not too technical — of the abstract words, "constant," "courage," "charity," "defend" (Terman–Merrill).

Name some rivers, cities and mountains in Massachusetts (Fernald). (Spelling of "Massachusetts" has proved to be too great a stumbling block!)

Similarities (eleven-year test, Terman–Merrill). The question is asked: "In what way are rose, potato and tree alike?" The same question for knifeblade, penny, piece of wire, or wool, cotton and leather and for book, teacher and newspaper.

The ball-and-field test (superior plan for thirteen-year level, Terman–Merrill; twelve-year-level, old Stanford), if presented as the problem of locating an unexploded bomb in a large circular enclosure, would doubtless be very valuable, if it were not too time consuming.

The commonest positive findings are language handicaps in recent immigrants; sympathetic overstimulation (moist hands, hyperactive tendon reflexes and hyperemia); intellectual retardation (noted in 3 to 5 per cent of the inductees, with about 2 or 3 per cent rejected on this account).

Despite my bias against even attempting any kind of neuropsychiatric examination in less than thirty minutes per candidate, I am obliged to conclude, after examining 1000 men, that in the vast majority of cases it is possible to make a reasonably reliable estimate of the neuropsychiatric assets of a candidate within five minutes.

The routine has been modified somewhat as indications warranted, and some examinations have required much more time; many of them, however, have actually required less than five minutes.

Dr. Aronoff has informed me that my experience has been shared by the other neuropsychiatrists who have been examining at this center; and I have no doubt that this report will be news only to the general physician, and to those neuropsychiatrists who have not been faced with a similar challenge.

Greeting the applicant with a smile, and the correct pronunciation of his name (ask him if in doubt), in addition to passing the time of day ("Good morning, Mr. X"), does much to built up rapport; a handshake and "Good luck, Mr. X" at the close of the interview have proved very valuable, inasmuch as a smiling candidate, who leaves the examining room with a "Thanks, Doc," has a better effect on the rest of the men waiting outside, not to mention its psychotherapeutic value to the future soldier.

It is important to remember that the essential distinction between these and ordinary neuropsychiatric examinations is that the overwhelming majority of these inductees do not (except in rare cases) have any complaints for which a differential diagnosis would be indicated. For this reason well over 90 per cent of them give negative findings, and can therefore be disposed of with considerable ease and promptness.

Finally, I have observed that my own fatigue, which was quite marked at the end of each of the first two sessions, has not been noticed since then; so that, although I consider forty examinations a day to be the maximum load, it is not impossible or too difficult to handle fifty in a four-hour session.

CALVERT STEIN, M.D.

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REPORT OF MEETING

CUTTER LECTURE

A Cutter Lecture on Preventive Medicine was delivered at the Harvard Medical School on March 7 by Dr. Ernest W. Goodpasture, of Vanderbilt University. His subject was "Intracellular Infection and Some of Its Possible Implications." At present there is much evidence in favor of the necessity of an interrelation of the living cell and virus for the propagation of the latter. This same dependence is now known to hold in regard to certain protozoa, and recently some bacteria have been demonstrated to need a living cell, whereas others benefit from this relation, especially in regard to invasion.

Before discussing the evidence for these latter statements, Dr. Goodpasture described the chick-embryo method of studying pathologic processes. The perpetuation of various bacteria on this medium and their growth in the characteristic tissue of the human disease were discussed. It has thus been found possible to reproduce certain phases of human diseases, especially the hitherto unexplored incubation period, on this medium. It has also proved beneficial in studying portals of entry and of measuring the potency of immune serum, since the chick embryo contains no antibodies or complement. It was suggested by Dr. Goodpasture that the method will therefore give a clearer idea of the mechanism of chemotherapy and prove more practical than in vitro experiments for antibody titer, and possibly will afford a new classification of bacteria based on a bacteria-cell interrelation.

On this latter basis the speaker has tentatively arranged certain familiar bacteria into three groups: extracellular, facultative extracellular or intracellular and obligate intracellular organisms. In the first group are *Corynebacterium diphtheriae*, *Staphylococcus aureus*, pneumococcus and *Streptococcus haemolyticus*. Slides were shown to demonstrate the well-known necrotic action of diphtheria toxin and the protection afforded by antitoxin through better phagocytosis; the early leukocytic and exudative reaction with fixation abscess in infections due to *Staph. aureus*; the early monocytic reaction against the streptococcus, which is inhibited by the elaborated toxin and thus allows invasion; and the inhibition of the pneumococcus by intracellular life. Among the organisms capable of either type of existence were demonstrated *Str. viridans* and the meningococcus, both of which penetrate and destroy in either environment. An organism from a case of human

subacute bacterial endocarditis caused typical endocardial vegetations, but similar lesions elsewhere ruled out this site as the one of choice.

Dr. Goodpasture then discussed in detail the known intracellular bacteria: *Pasteurella tularensis*, *Brucella abortus* and *Past. pestis*. The first of these was shown to invade the ectodermal cells early and to multiply therein very rapidly. The host cells gradually disintegrate, and the bacteria disappear in leukocytes. Inner tissues are later invaded by means of monocytic and fibroblastic host cells. *Br. abortus* first manifests growth in an overlying blood film and elicits an exudate of polymorphonuclear and monocytic leukocytes. Growth then proceeds in these latter cells, and invasion of ectodermal cells occurs without much reaction. Finally the bacteria reach the endothelial cells in about ninety-six hours and there enjoy their optimum environment. *Past. pestis* grows rapidly and causes a leukocytic exudate. There is little invasion of ectoderm, but ready entrance to the mesodermal structures, with rupture of blood vessels, hemorrhage and the formation of a pustule with polymorphonuclear cells in the center and monocytes at the periphery. Although there is no evidence of growth in the circulating blood, the presence of these bacteria in the liver sinusoids indicates their transit by this medium. Their multiplication in the liver sinusoids is proof of their power for extracellular growth, but the optimum environment is in the mesodermal cells, where engorgement of the blood vessels causes hemorrhages. The importance of these observations is the persistence of the cell-parasite relation. Each of these bacteria can, however, grow extracellularly, but the first two only in the presence of necrosis.

From a practical standpoint these studies indicate that there is an optimum channel of entry for each bacterium and that antibody formation is a development of the latter part of the incubation period — at least in the chick embryo. The same tendency for choice portals of entry is seen in the necessity for ciliated epithelium for pertussis in man. The changes of the environment and consequently of resistance are present in man as well as in the chick embryo. The initial lesions in the latter also simulate those in human beings, and the later changes in man differ only in the complexity of the changes in resistance in the latter organism. Therefore, this method of study is important, particularly for determining the early changes in disease.

Some bacteria are obligate intracellular, such as those of leprosy and certain arthropodal diseases. But among the facultative intracellular bacteria, *Past. pestis* is considered to be in its optimum environment extracellularly where it multiplies in groups, whereas it is probably restricted during its intracellular sojourn. This seems to indicate that this bacterium is self-reliant and probably has a highly developed enzymatic system. *Past. tularensis* and *Br. abortus*, on the other hand, are almost entirely dependent on an intracellular existence, which seems to supply or stimulate some missing substance. These organisms differ from extracellular bacteria and from the viruses and rickettsia in that they are spread by the mitosis and death of cells. It was suggested that *Past. tularensis* may develop a similar faculty, in which case the danger of its spread in the pulmonary form would be a problem. The ability of an organism to neutralize the intracellular medium is important in the establishment of immunity, and the duration of a disease is measured by the time required for the antigen to stimulate an adequate antibody response. Organisms that can exist and multiply intracellularly as well as extracellularly are best able to withstand the antibodies of the host until resistance reaches a low ebb. Even typhoid fever has been demonstrated to exist in an intracellular phase in the plasma during certain phases, and this may be a means of prolonging the disease.

In conclusion, Dr. Goodpasture discussed chemotherapy. The sulfonamides have proved effective against only the extracellular bacteria; they are of merely questionable value on facultative intracellular organisms, and useless against obligate intracellular pathogens. It was brought out that the effect of drugs on the cell host may be so severe as to injure them beyond the point where the intracellular parasite can survive. Finally, it was suggested that viruses may merely be degradation products of bacteria that have become lazy and, hence, reliant on the cell host.

NOTICES

BOSTON GASTROENTEROLOGICAL SOCIETY

There will be a meeting of the Boston Gastroenterological Society at the Joseph H. Pratt Diagnostic Hospital on Thursday, May 29, at 12 m.

PROGRAM

Gastroscopic Studies in Pernicious Anemia. Dr. Henry H. Lerner.
Spasm of the Esophagus. Dr. Katherine S. Andrews.
Hemolytic and Nonhemolytic Jaundice. Dr. William Dameshek.
Xanthomatous Biliary Cirrhosis. Dr. Siegfried J. Thannhauser.
Exhibit of Mechanics of the Food Clinic. Miss Stearns.

NEW ENGLAND HOSPITAL FOR WOMEN AND CHILDREN

The monthly clinical conference and meeting of the staff of the New England Hospital for Women and Children will be held on Thursday, June 5, at 7:15 p.m. in the classroom of the Nurses' Residence. Dr. B. McWeeny Ryder will be the chairman.

PROGRAM

Lecture on Cancer. Dr. Herbert L. Lombard, consultant in cancer research, United States Public Health Service.

MASSACHUSETTS CENTRAL HEALTH COUNCIL

The annual meeting of the Massachusetts Central Health Council will be held at the Hotel Sheraton, 91 Bay State Road, Boston, on Tuesday, May 27, at 12:15 p.m. Dr. Garry deN. Hough, Jr., of Springfield, former chairman of the Springfield Health Promotion Council, will speak on "Local Health Councils." Representatives from other local health councils will discuss briefly the organization and work of their councils.

Members of the Massachusetts Medical Society, one of the constituent agencies in the Massachusetts Central Health Council, are invited to attend. Luncheon reservations, at $1.00 per person, should be sent by Saturday, May 24, to Mr. Arthur J. Strawson, secretary, Massachusetts Central Health Council, 1148 Little Building, Boston.

NEW ENGLAND HEART ASSOCIATION

The next meeting of the New England Heart Association will be held at the Evans Memorial Hospital on Monday, May 26, at 8:15 p.m.

PROGRAM

Presentation of cases. Dr. James M. Faulkner.

Studies on the Third Heart Sound. Dr. Norman H. Boyer.

Perforation of Interventricular Septum: Report of four cases. Drs. G. Kenneth Mallory, William G. Peacher and Charles F. Branch.

The Nature of the Arterial Hypertension Produced by Administration of Angiotonin to Normal Subjects. Dr. Robert W. Wilkins.

Pericardiostomy for Purulent Pericarditis. Dr. John W. Strieder.

Cardiac Failure Due to Intercapillary Glomerulosclerosis. Drs. Harold J. Jeghers and O. J. Wollenman.

Interested physicians and medical students are cordially invited to attend.

CONSULTATION CLINICS FOR CRIPPLED CHILDREN IN MASSACHUSETTS, UNDER THE PROVISIONS OF THE SOCIAL SECURITY ACT

CLINIC	DATE	CLINIC CONSULTANT
Lowell	June 6	Albert H. Brewster
Gardner	June 10	Mark H. Rogers
Haverhill	June 11	William T. Green
Pittsfield	June 16	Frank A. Slowick
Northampton	June 18	Garry deN. Hough, Jr.
Brockton	June 19	George H. Van Gorder
Worcester	June 20	John W. O'Meara
Fall River	June 23	Eugene A. McCarthy
Hyannis	June 24	Paul L. Norton

EXAMINATIONS FOR APPOINTMENTS IN THE MEDICAL CORPS OF THE UNITED STATES NAVY

The next examination for appointments as assistant surgeon (lieutenant, junior grade), United States Navy Medical Corps, will be held at all major Medical Department activities on August 11 to 15, inclusive. Applications for this examination must be received at the Bureau of Medicine and Surgery, Navy Department, Washington, D. C., not later than July 15.

Applicants for appointment as assistant surgeon must be citizens of the United States, more than twenty-one but less than thirty-two years of age at the time of acceptance of appointment, and graduates of a Class A medical school who have completed at least one year of intern training in a hospital accredited for intern training by the Council on Medical Education and Hospitals of the American Medical Association.

A circular of information listing physical and other requirements for appointment, subjects in which applicants are examined, application forms and other data pertaining to salary, allowances and so forth may be obtained from the Bureau of Medicine and Surgery on request.

An examination for appointment as acting assistant surgeon for intern training in naval hospitals accredited for intern training by the Council on Medical Education and Hospitals of the American Medical Association will be held at all major Medical Department activities on June 23 to 26, inclusive. Students in Class A medical schools who will complete their medical education this year are eligible to apply for these appointments, and if successful will receive their appointments approximately after the date of the examinations. Students in Class A medical schools who will have completed their third year of medical education this year are eligible to take this examination, and if successful will receive their appointments on or about July 1, 1942, after they have completed their medical education.

Applicants for appointment as acting assistant surgeon for intern training must be citizens of the United States, more than twenty-one but less than thirty-two years of age at the time of acceptance of appointment. Acting assistant surgeons are appointed for a period of eighteen months. After the appointee has served as an intern in a naval hospital for twelve months, he is eligible for and may take the examination for appointment as assistant surgeon.

A circular of information listing physical and other requirements for appointment as acting assistant surgeon, subjects in which applicants are examined, application forms and so forth may also be obtained from the Bureau of Medicine and Surgery on request.

Assistant surgeons and acting assistant surgeons for intern training are appointed in the rank of lieutenant (junior grade), Medical Corps, United States Navy. The pay and allowances for an officer of this rank total $2699 per year if he has no dependents, and $3158 per year if he is married or has dependents.

SOCIETY MEETINGS AND CONFERENCES

CALENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING SUNDAY, MAY 25

MONDAY, MAY 26

12:15–1:15 p.m. Clinicopathological conference. Peter Bent Brigham Hospital amphitheater.

*8:15 p.m. New England Heart Association. Evans Memorial Hospital, Boston.

TUESDAY, MAY 27

*9–10 a.m. Secretin Test of Pancreatic Function. Dr. A. S. Hartwell. Joseph H. Pratt Diagnostic Hospital.

12:15 p.m. Local Health Councils. Dr. Garry deN. Hough, Jr. Massachusetts Central Health Council. Hotel Sheraton, 91 Bay State Road, Boston.

12:15–1:15 p.m. Clinicoroentgenologic conference. Peter Bent Brigham Hospital amphitheater.

WEDNESDAY, MAY 28

*9–10 a.m. Hospital case presentation. Dr. S. J. Thannhauser. Joseph H. Pratt Diagnostic Hospital.

*12 m. Clinicopathological conference. Children's Hospital.

THURSDAY, MAY 29

*9–10 a.m. X-ray demonstration. Dr. Alice Ettinger. Joseph H. Pratt Diagnostic Hospital.

12 m. Boston Gastroenterological Society. Joseph H. Pratt Diagnostic Hospital.

SATURDAY, MAY 31

*9–10 a.m. Hospital case presentation. Dr. S. J. Thannhauser. Joseph H. Pratt Diagnostic Hospital.

*Open to the medical profession.

MAY 28–JUNE 2 — American Board of Obstetrics and Gynecology. Page 262, issue of February 6.

MAY 29–31 — Medical Library Association. Page 671, issue of April 10.

MAY 30, 31 — American Heart Association. Hotel Statler, Cleveland.

MAY 30–JUNE 2 — American College of Chest Physicians. Hotel Statler, Cleveland.

JUNE 2 — American Medical Golfing Association. Page 785, issue of May 1.

JUNE 2–6 — American Medical Association. Cleveland.

JUNE 2–6 — Woman's Auxiliary, American Medical Association. Hotel Carter, Cleveland.

JUNE 4 — Harvard Medical Alumni Association. Page 790, issue of May 1.

JUNE 5 — New England Hospital for Women and Children. Page 922.

JUNE 22–24 — Maine Medical Association. Marshall House, York Harbor, Maine.

OCTOBER 13–24 — 1941 Graduate Fortnight of the New York Academy of Medicine. Page 834, issue of May 8.

OCTOBER 14–17 — American Public Health Association. Page 579, issue of March 27.

BOOKS RECEIVED

The receipt of the following books is acknowledged, and this listing must be regarded as a sufficient return for the courtesy of the sender. Books that appear to be of particular interest will be reviewed as space permits. Additional information in regard to all listed books will be gladly furnished on request.

The Mask of Sanity: An attempt to reinterpret the so-called psychopathic personality. By Hervey Cleckley, B.A. (Oxon.), M.D., professor of neuropsychiatry, University of Georgia School of Medicine, Augusta, Georgia. 8°, cloth, 298 pp. St. Louis: The C. V. Mosby Company, 1941. $3.00.

Textbook of Medicine. By various authors. Edited by J. J. Conybeare, M.C., D.M. (Oxon.), F.R.C.P., physician to Guy's Hospital, London. Fifth edition. 8°, cloth, 1131 pp., with 24 illustrations and 31 x-ray plates. Baltimore: Williams and Wilkins Company, 1940. $7.50.

The Avitaminoses: The chemical, clinical and pathological aspects of the vitamin deficiency diseases. By Walter H. Eddy, Ph.D., professor of physiological chemistry, Teachers College, Columbia University; and Gilbert Dalldorf, M.D., pathologist to the Grasslands and Northern Westchester hospitals, New York. Second edition. 8°, cloth, 519 pp., with 28 illustrations and 40 plates. Baltimore: Williams and Wilkins Company, 1941. $4.50.

First Aid in Emergencies. By Eldridge L. Eliason, M.D., Sc.D., professor of surgery, University of Pennsylvania School of Medicine, professor of surgery, University of Pennsylvania Graduate School of Medicine, and surgeon, University of Pennsylvania, Presbyterian and Philadelphia General hospitals. Tenth edition, completely revised and reset. 16°, cloth, 260 pp., with 126 illustrations. Philadelphia: J. B. Lippincott Company, 1941. $1.75.

The Essentials of Applied Medical Laboratory Technic: Details of how to build and conduct an office or small hospital laboratory at small cost. By J. M. Feder, M.D., director of laboratories and Allergic Service, Anderson County Hospital, Anderson, South Carolina. *Blood and Plasma Transfusion.* By John Elliott, Sc.D., pathologist, Rowan General Hospital, Salisbury, North Carolina. 4°, cloth, 241 pp., with 83 illustrations. Charlotte, N. C.: Charlotte Medical Press, 1940. $5.00.

The Rockefeller Foundation: A review for 1940. By Raymond B. Fosdick, president of the Foundation. 8°, paper, 64 pp. New York: The Rockefeller Foundation, 1941.

The Heart in Pregnancy and the Childbearing Age. By Burton E. Hamilton, M.D., cardiologist, Boston Lying-in Hospital; and K. Jefferson Thomson, M.D., associate physician, Metropolitan Life Insurance Company Sanatorium, Mount McGregor, New York, and research associate in medicine, Albany Medical College; with a section entitled "Delivery and Obstetrical After-Care of Cardiacs," by Frederick C. Irving, M.D., professor of obstetrics, Harvard Medical School, and obstetrician-in-chief, Boston Lying-In Hospital. 8°, cloth, 402 pp., with 35 figures and 22 tables. Boston: Little, Brown and Company, 1941. $5.00.

Criminal Youth and the Borstal System. By William Healy, M.D., and Benedict S. Alper, of the Judge Baker Guidance Center, Boston. 8°, cloth, 251 pp. New York: Commonwealth Fund, 1941. $1.50.

BOOK REVIEWS

La maladie de Besnier–Boeck–Schaumann; ses manifestations cutanées, ganglionnaires, pulmonaires, osseuses, oculaires, glandulaires, viscérales, nasales, nerveuses. Une nouvelle grande réticulo-endothéliose. By L.-M. Pautrier. 4°, paper, 341 pp., with 105 illustrations. Paris: Masson et Cie. $2.05.

In his preface, Professor Pautrier indicts the classic dermatologist in the following terms: "La dermatologie de collectionneur de timbres rares ou de papillons n'offre plus aucun intérêt. Loin de créer dix maladies nouvelles chaque année, il faudrait en supprimer tout autant. Nos méthodes trop longtemps purement visuelles ont raffiné et dissocié comme à plaisir. On discute gravement sur la presence ou l'absence de telle petite squame, ou de telle papule, ou de telle tendance à l'atrophie pour diviser, subdiviser, créer des types nouveaux, des formes anormales. Nous sommes ainsi arrivés à nous créer un vocabulaire invraisemblable, que rebute les debutants, perdus dans les régles de ce jeu compliqué et que, si nous n'y prenions garde, ferait bientôt de nous la risée des autres disciplines médicales."

Such words are most refreshing coming from a noted dermatologist and give hope that the days of descriptive dermatology are drawing to a close. In its history, sarcoid or Hutchinson–Boeck's disease is a good example of the danger of missing the woods because of the trees. The present monograph has successfully drawn together all that is known at the present time concerning this particular malady. It is fully illustrated, and the reproductions of photographs of skin lesions and of the x-ray changes are unusually good. The photomicrographs, however, are not, in general, so well portrayed.

Professor Pautrier has covered in a thorough fashion the literature on the subject, although it must be suspected that at times he has not read papers in the original, since authors' names are not infrequently misspelled — particularly authors writing in other than French journals. On the other hand, it is a monograph that should be on the reference shelf of every dermatologist and every internist concerned with this interesting but relatively uncommon condition.

Unfortunately, owing to world conditions, it is probable that few copies can be obtained in this country at present.

Diseases of the Urethra and Penis. By E. D'Arcy McCrea, M.D., M.Ch. (Dub.), F.R.C.S. (Ireland), F.R.C.S. (Eng.). 8°, cloth, 306 pp., with 181 illustrations. Baltimore: Williams and Wilkins Company, 1940. $6.50.

This book is an adequate account of the clinical aspects of diseases of the penis and urethra, accompanied by sufficient bibliographic references to bring the subject matter thoroughly up to date. Personal experiences of the author are only occasionally noted, so that the work represents almost wholly a compilation of material already in existence in most textbooks. This, together with the limitations of the subject itself, makes the book not worth an extensive review.